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*Full Length Research Paper*

# Contribution of agricultural and forestry extension services to inclusive extension system in North-West Pakistan: A case study of Mansehra and Swat districts of Khyber Pakhtunkhwa Province

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Agriculture and forestry are generally considered as parallel activities where different institutions are working for rural people. The mountainous region of Khyber Pakhtunkhwa Province (KP) of Pakistan makes an interesting case study because good forest cover is appeared and farming is an important component of local livelihood system. This study presents the findings from the field survey of 48 extension services personnel (24 from each) of agriculture and forest departments. The main objectives of the study were to identify the linkages between agricultural and forestry extension services and to find out the factors hindering the effectiveness of linkages. A 3-point Likert scale was used to find out the frequency of the extension services offered for crops, trees and fruit trees by agricultural and forestry extension. Descriptive analysis was used to describe the frequencies, mean and standard deviation of the demographic characteristics of the respondents. Wilcoxon-Mann-Whitney U-test for independent nonparametric sample was also used for finding the association among the areas of practices and the extension services. The results show that fruit trees are the common area of practices where both organizations provide extension services to the farming community. Both departments are also carrying-out the above services for fruit trees in particular while crops and other trees in general. Weak formal and in-formal contacts between agricultural and forestry extension services were found. It was concluded that by implementing common activities for fruit trees, linkages between agricultural and forestry extension services can be established. The paper also identifies differences in age, educational background, less number of field visits and weak formal linkages of field staff as the factors hindering the effectiveness of extension services.

**Key words:** Agricultural extension, forestry extension, linkages, common practices, fruit trees.

## INTRODUCTION

### Agriculture and forestry extension

Extension is the diffusion of applicable information to the farming community (Agbogidi and Ofuoku, 2009). Extension services use educational methods to help farmers help themselves. In other words, extension

education is a voluntary type of non-formal education for farmers outside of school and college (Onumadu et al., 2001). Extension services are important to improve food security situation by improving crop productivity



(Amir et al., 2013).

The agriculture and forestry sectors are generally considered parallel activities wherein different institutions are working. In the agriculture sector, provision of services to the farming community in order to improve its agricultural productivity and to improve livelihoods on a sustainable basis is the prime responsibility of agricultural extension (Kibett et al., 2005). It promotes the transfer of agricultural technology and innovations in order to improve the livelihoods of end users mean farming community (Khan and Akram, 2012). Similarly, forestry extension programs are designed to meet the needs of small-scale producers in forested area through agro-forestry techniques. Effective collaboration among different institutions working for similar purposes is essential for the achievement of the desired goals (FAO, 1996).

### **Agricultural and forestry extension in Pakistan**

The agriculture sector contributes 21.8% of GDP, employs 45% of the labor force (Government of Pakistan, 2011) and comprises a 66% share of exports (GoP, 2010, 2011) in Pakistan's overall economy. More than 70% of the country population resides in rural areas and relies on this sector directly or indirectly (GoP, 2011). On the other hand, forests and planted trees in Pakistan cover approximately 4.6 million hectares, which is equivalent to 4.8% of the total land area (GoP, 2005).

In Pakistan, extension work has been in progress since the country's independence in 1947. However, at that time the extension department did not have its independent identity; extension work was undertaken under the shadow of different community development programs. The agricultural extension in Pakistan has been managed by provinces as Agricultural Extension Department and provides technical skills to farmers. The Agriculture management model in Pakistan is quite similar to other developing countries. The Ministry of Food, Agriculture and Livestock (MINFAL) through its provincial departments carries out most of the agricultural extension (Swanson et al., 1990). At present, agricultural extension is modeled around a training and visit system, which relies on contact farmers to diffuse technical information to surrounding farmers (Ahmad et al., 2000). With special reference to forest, in 1991, the Pakistani government appointed forest extension workers to promote farm forestry (Baig et al., 2008). In comparison with agricultural extension, forest extension services are quite different in Pakistan where at federal level Ministry of Environment and Climate Change and at provincial level forestry departments look after the forestry issues

within their domains. Each province has a forest department which is responsible for the administration of the sector. Forestry administration is decentralized and provinces are responsible for "planning and implementation of forest and range management programmes". Long-term policy, however, is a federal responsibility.

### **Problem statement and research objectives**

Public sector agricultural extension services of developing countries have been criticized rigorously for their poor efficiency (World Bank, 2006). These rural advisory services have a mandate to transform the livelihoods of rural dwellers through effective linkages with sister organizations or departments (Ifeanyi-obi et al., 2012). However weak institutional linkages between different service providers in the agriculture sector are responsible for the poor performance of agriculture in Pakistan (Farooq and Ishaq, 2005). Forest makes major contributions which serve as productive, protective, regulative and socio-cultural functions in Pakistan's economy (Ali et al., 2006). Similar to agricultural extension, forestry extension services also faces problems of weak linkages with allied state departments in Pakistan (Jan et al., 2008). Among these institutional problems, the lack of coordination between institutions (local government and the forestry department) is regarded as the most important (Babar et al., 2008).

For this reason the present study was conducted with the objectives to identify the linkages between agricultural and forestry extension services and also to find out the factors hindering the effectiveness of linkages among agricultural and forestry extension system in the study area.

### **MATERIALS AND METHODS**

#### **Area of study**

The Khyber Pakhtunkhwa Province (Figure 1), previously known as the North-West Frontier Province (NWFP) of Pakistan, was chosen for the present research project because the province is rich in forestry resources and its economy is mainly dependent on agriculture as well as forestry.

#### **Sampling techniques and sampling**

A multi-stage sampling technique was used to select the required sample (Cochran, 1977). In the first stage, from within Khyber Pakhtunkhwa, two districts (Mansehra and Swat) were purposely selected because both districts are among those districts of

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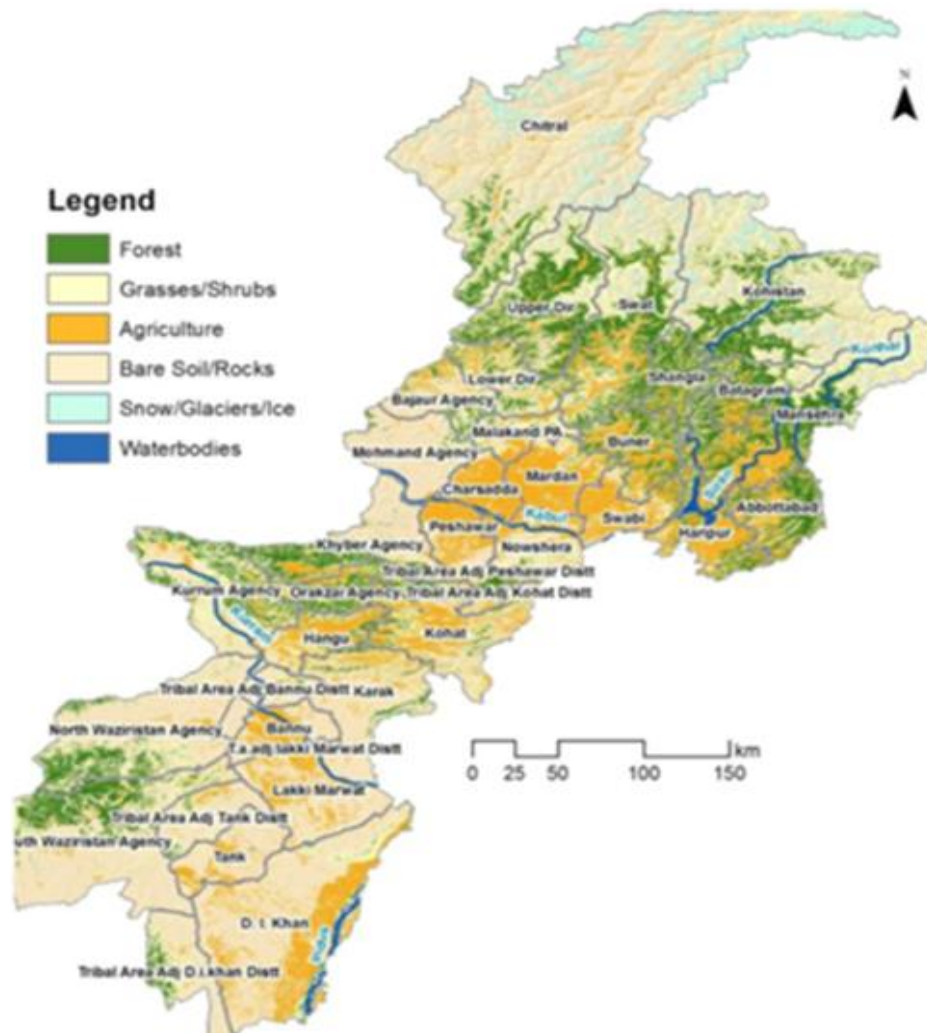


Figure 1. Khyber Pakhtunkhwa Province, Pakistan.

Pakistan which have maximum forest resources and the major part of the population of these mountainous regions depends directly on agriculture and forest only. In the second stage, from within each of the two districts, two tehsils<sup>1</sup> were selected with the criteria of maximum number of field staff from agricultural extension and forestry extension services as compared to other tehsils. The entire 48 field staff's working in the study area from agricultural extension and forestry extension were selected which constitutes the sample for the present research (Figure 2). An Agricultural Officer works as a front line extension worker whereas agricultural Inspectors and Field Assistants help him to organize his work. Usually one Agricultural Officer appointed in one tehsil. On the other hand Range Officer/Forest Officer is responsible to manage the forests under his control consistent with the objects of managements in each case. Similar to Agricultural Officer in most of the cases one Range Officer is appointed in one tehsil. He is responsible for the execution of all works in the range, with the help of Block Officers/Foresters and Forest Guards, according to the instructions from higher authorities.

<sup>1</sup> A tehsil is an administrative unit within a district in Pakistan. A district usually has two or more tehsils.

### Methods of data collection

The data were collected through the field survey during August and September, 2012. Qualitative and quantitative social science research methods were used in this study. For the present study, the quantitative data were collected using structured questionnaire during survey as research instrument. As most of the respondents who were not having good command in English, therefore the questionnaires were filled by the researcher after face-to-face interviews. The qualitative data helps to explicate the quantitative data and in-depth understanding of the problem. Key informants interviews with some officials based at provincial and district levels and participant observations were used as the tools to acquire the qualitative data for this study.

### Measurement of variables

To classify the frequency of the extension services offered for crops, trees and fruit trees by agricultural and forestry extension workers 3-point Likert scale was used as 1=Never, 2=Sometimes and 3=Most of the times.



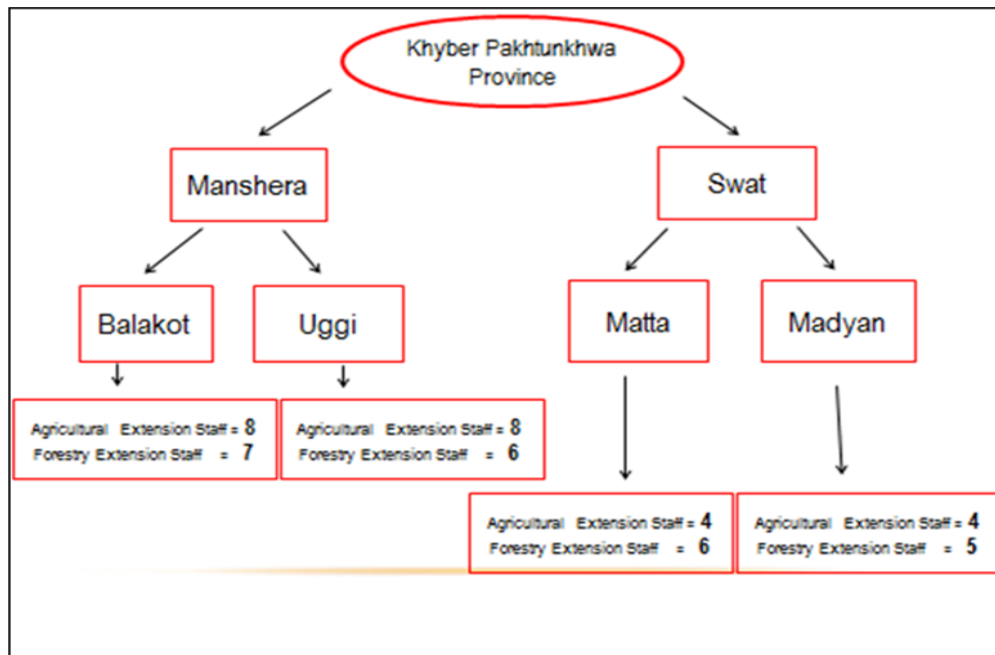


Figure 2. Selection of sample according to their working territory.

### Analysis of data

The quantitative data were analyzed using the Statistical Package for Social Scientists, SPSS (Davis et al., 2004). A descriptive analysis was used for frequencies, means and standard deviations (Eck and Torres, 1996; Ogunjuyigbe et al., 2005; Lodhi et al., 2006). The Wilcoxon-Mann-Whitney t-test (for an independent nonparametric sample) was also used to find the association among the areas of practices and the extension services implemented by agricultural and forestry extension separately. The same method was also used to identify the common areas of practice among agricultural and forestry extension services.

### Profile of study area

#### District Mansehra

Total area of the district is "10,67,291" acres with population of 1,152,839 (GoP, 2012). Cultivation of crops mainly depends on seasonal rainfall. The mentionable crops of Mansehra are wheat, maize, rice, tobacco rape seed and mustard, barley and fodder, vegetables, soybeans and pulses. Fruit orchards are also a source of income. Large number of people earns their livelihood through agriculture. Mansehra is one of the richest districts as regards the forest wealth of Pakistan, having many small and large forests scattered throughout the region. Forests of the district are rich in trees as Deodar, Blue pine, Chir, Walnut, Cherry, Poplar and Kao (wild olive) etc. A large variety of medicinal plants are also found in the forests. Such plants are also grown especially in the northern forests and a large variety of wild life is also depending on these forests (GoP, 2009).

#### District swat

District swat is a part of the high altitude Hindu Kush Himalaya (HKH) region of Pakistan comprising a diverse set of biophysical,

ecological and socio-economic characteristics. Total area of the district is "13,18,801" acres and population of 1,257,602 (GoP, 2012). Agriculture accounts for roughly 50% of the economic activities of district. The main crops of swat include wheat, maize, vegetables, tobacco, fruits, soya bean and sun flower. Swat is well known for certain fruits and nuts. Peaches, apricot, walnuts, almonds and pistachios are consumed locally as well as export for revenue. Analysis of land cover data of this region is particularly important because of disparate accounts on the state of forest resources of Pakistan in general and swat in particular. Mainly official Pakistani sources frequently claim that Pakistan forests have been progressively increasing as a result of afforestation efforts and increasing environmental awareness. On the other hand, a number of studies and international statistics have reported significant deforestation in Pakistan.

## RESULTS

### Demographic characteristics

The data in Table 1 show the demographic characteristics of the respondents. In the age category, 11 agricultural extension workers were categorized in middle age and 18 forestry extension workers were categorized in old age. The means SD for age of the respondents from agriculture extension and forestry extension were  $2.13 \pm 0.74$  and  $2.75 \pm 0.61$ , respectively. The education level of the extension workers is an important characteristic for meaningful progress towards intended goals (Gibson and Brown, 2003). Eighteen respondents from agricultural extension services and fifteen from forestry extension services had a diploma (12 years of education) in agriculture and forestry, respectively. Only four respondents from both extension

**Table 1.** Distribution of the Respondents according to their Demographic Characteristics.

Factors	Extension services		Agricultural				Forestry			
	Category	Frequency	Percentage	Mean	SD	Category	Frequency	Percentage	Mean	SD
Age (years)	Young (16-30)	5	20.8	2.13	0.741	Young (16-30)	1	4.2	2.75	0.608
	Middle Age (31-45)	11	45.8			Middle Age (31-45)	5	20.8		
	Old (46 and above)	8	33.3			Old (46 and above)	18	75.0		
	<b>Total</b>	<b>24</b>	<b>100.0</b>			<b>Total</b>	<b>24</b>	<b>100.0</b>		
Education	Masters	4	16.7	2.75	0.847	Masters	3	12.5	2.92	0.881
	Bachelors	0	0			Bachelors	1	4.2		
	Diploma	18	75.0			Diploma	15	62.5		
	Certificate	2	8.3			Certificate	5	20.8		
<b>Total</b>	<b>24</b>	<b>100.0</b>	<b>Total</b>	<b>24</b>	<b>100.0</b>					
Position	Agricultural Officer	4	16.7	2.75	0.944	Range Officer	6	25.0	2.13	0.797
	Agricultural Inspector	1	4.2			Block Officer	9	37.5		
	Field Assistant	17	70.8			Forest Guard	9	37.5		
	Budder	1	4.2			<b>Total</b>	<b>24</b>	<b>100.0</b>		
	Field Worker	1	4.2			<b>Total</b>	<b>24</b>	<b>100.0</b>		
Experience (years)	1-10	14	58.3	1.88	1.191	1-10	2	8.3	3.33	0.963
	11-20	3	12.5			11-20	1	4.2		
	21-30	3	12.5			21-30	9	37.5		
	31-40	4	16.7			Above 30 Years	12	50.0		
	<b>Total</b>	<b>24</b>	<b>100.0</b>			<b>Total</b>	<b>24</b>	<b>100.0</b>		

Source. Field Data.

services held professional masters (16 years of education) and bachelor's (14 years of education) degrees in an agriculture or forestry-related subject. The data also indicate that most of the respondents were lower-ranking field staff that is, seventeen were Field Assistants from agricultural extension services and eighteen were Block Officers and Forest Guards collectively from forestry extension services. They are considered front-line agents, as they have frequent contact with the target community and are locally based.

The results in Table 1 demonstrate that fourteen respondents from agricultural extension services had work experience up-to 10 years and from forestry extension service 12 respondents had work experience above then 30 years.

#### Extension services

An effective provision of extension services can help in increasing the productivity and improving

the livelihood. Extension services are implicit as a connection among farmers, researchers and teaching institutions (Khan and Akram, 2012). The collected data regarding respondents who deliver extension services for crops, trees and fruits trees is depicted in Table 2.

#### Education and training

Majority of the respondents that is, eighteen from

**Table 2.** Distribution of the respondents according to the extension services they provide in crops, trees and fruit trees.

Extension services		Education and training			Production technology transfer			Protection technology transfer			Post-harvesting technology transfer			Marketing			Financing			Infrastructure development			Community mobilization			Total
		Never	Some times	Most of the times	Never	Some times	Most of the times	Never	Some times	Most of the times	Never	Some times	Most of the times	Never	Some times	Most of the times	Never	Some times	Most of the times	Never	Some times	Most of the times	Never	Some times	Most of the times	
Agricultural Extension	Crops	0	10	14	0	11	13	0	12	12	0	8	16	0	7	17	1	17	6	1	10	13	0	10	14	24
	Trees	12	11	1	9	15	0	9	15	0	13	11	0	13	11	0	18	6	0	15	9	0	12	11	1	24
	Fruit trees	0	6	18	0	8	16	0	7	17	0	11	13	0	12	12	3	16	5	2	13	9	0	6	18	24
Forestry Extension	Crops	11	13	0	12	12	0	14	10	0	19	5	0	19	5	0	21	3	0	21	3	0	5	19	0	24
	Trees	0	6	18	0	9	15	0	9	15	0	9	15	0	9	15	0	15	9	0	14	10	0	7	17	24
	Fruit trees	0	8	16	0	11	13	0	11	13	0	11	13	0	13	11	0	19	5	0	16	8	0	9	15	24

Source: Field data.

agricultural extension and sixteen from forestry extension as indicated in Table 2, that they provided education and training to the farming community in their working territory about fruit trees most of the times. While twelve respondents from agricultural extension and eleven from forestry extension had never provided education and training for trees and crops, respectively to their target community.

**Technology transfer**

The data regarding technology transfer on “production techniques” given in Table 2 shows

that sixteen respondents from agricultural extension services and thirteen from forestry extension services were involved in dissemination of modern technology using in production techniques for fruit trees most of the times. While nine respondents from agricultural extension and twelve from forestry extension were never involved in technology transfer for production of trees and crops in the farming community of their working area, respectively.

Table 2 also indicates clearly that a majority, seventeen respondents from agricultural extension services and thirteen from forestry extension services, were involved most of the times in diffusion of modern technology

procedures in protection of fruit trees. Additionally, nine of the respondents from agricultural extension and fourteen from forestry extension told that they were never involved in technology dissemination for protection of trees and crops, respectively.

The data regarding “post-harvest techniques” given in in Table 2 reveals that thirteen respondents from agricultural extension services and also thirteen from forestry extension services were involved in dissemination of recent post-harvesting techniques for fruit trees most of the times. Whereas, thirteen of the respondents from agricultural extension and nineteen from forestry extension were never involved in spreading of

technology transfer for post-harvesting techniques for trees and crops in the farming community of their target area, respectively.

### Marketing

One of the responsibilities of extension services is to facilitate the farmers about marketing and create awareness about new markets trends to their target farming community. The data in Table 2 depicts that half of the respondents; twelve from agricultural extension services helps in marketing of fruit trees most of the times, while thirteen of the respondents from agricultural extension told that they never offer this for trees among the farmers of their working territory. The data in Table 2 also describes that a majority, thirteen of the respondents from forestry extension offers services in marketing procedures about fruit trees sometimes besides trees. Furthermore, nineteen had never offered any advice related to marketing as extension service for crops in their target community.

### Financing

The data in Table 2 shows that sixteen respondents from agricultural extension services were involved in helping and organizing the available financial resources for fruit trees sometimes. While an overwhelming majority eighteen respondents never discussed this topic for trees in the farming community of their area. On the other hand, data in Table 2 reveals that nineteen respondents from forestry extension services said they help with financial issues in the target community by providing residents easy and available solutions for fruit trees sometimes, whereas twenty one respondents from forestry extension accepted that they never touch these issues of financing for crops in their target community

### Infrastructure development

Although infrastructure development is not one of the core responsibilities of Extension Services, however during natural and some man-made disasters; extension services help the farmers and line departments in the field in addressing the issue of infrastructure development due to closer relations to the farming community. The data in Table 2 reflects that thirteen respondents from agricultural extension services took part in this activity sometimes as related to fruit trees. However, majority fifteen respondents from agricultural extension meanwhile never took part in this type of work for trees in their target community. Furthermore, Table 2 describes that sixteen respondents from forestry extension services sometimes offered their services for

infrastructure development related to fruit trees. An overwhelming majority that is, twenty one respondents from forestry extension never took part in infrastructure development related to crops in their target community.

### Community mobilization

Community mobilization is one of the important extension services which help the farmers through awareness of effective work and proper utilization of the available resources for achieving their needs. The data in Table 2 demonstrate that eighteen respondents from agricultural extension services were involved in community mobilization in different ways for fruit trees most of the times. Unfortunately, twelve respondents from agricultural extension accepted the fact that they never involved in community mobilization for trees in the farming community of their area. On the other hand, Table 2 data shows that 15 respondents from forestry extension services shown their association with community mobilization related to fruit trees most of the times. A small portion of respondents that is, five from forestry extension were never engaged in community mobilization as a core activity for crops in the farming community.

### Association between extension services and area of practice by agricultural extension and forestry extension

The results of Mann-Whitney's U test in the responses of 3-Likert scale for identifying the association between extension services and areas of practice provided by agricultural extension and forestry extension is given in Table 3. The result shows that similar kind of association was found between crops and fruit trees by agricultural extension in provision of all extension services as the z-value (-1.212, -0.876, -1.460, -0.876, -1.460, -0.747, -1.192, -1.212) for education and training, technology transfer for production, protection and post-harvest techniques, marketing, financing, infrastructure development and community mobilization. Also, similar kind of interest was found between trees and fruit trees by forestry extension in provision of all extension services as the z-value (-0.628, -0.579, -0.579, -0.579, -1.147, -1.257, -0.590, -0.606) respectively. The small values for difference in mean rank also supports the results.

### Association between extension services and area of practice among agricultural extension and forestry extension

The results of Mann-Whitney's U test in the responses of 3-Likert scale for exploring the association between extension services and areas of practice among

**Table 3.** Association between extension services and area of practice of agricultural extension and forestry extension.

Extension services		Education and training	Production technology	Protection technology	Post-harvest techniques	Marketing	Financing	Infrastructure development	Community mobilization
Area of practices									
Agricultural Extension	<b>Crops - fruit trees</b>								
	Mean rank difference	-4.00	-3.00	-5.00	3.00	5.00	2.46	4.30	-4.00
	Z	-1.212	-0.876	-1.460	-0.876	-1.460	-0.747	-1.192	-1.212
	<b>Fruit trees - trees</b>								
	Mean rank difference	20.00	19.00	19.62	18.96	18.50	16.25	16.38	20.00
	Z	-5.280***	-5.109***	-5.258***	-5.046***	-4.951***	-4.442***	-4.387***	-5.280***
	<b>Crops - trees</b>								
	Mean rank difference	18.00	17.12	16.50	20.34	20.80	18.50	18.88	18.00
	Z	-4.774***	-4.694***	-4.564***	-5.359***	-5.474***	-5.036***	-4.974***	-4.774***
	<b>Trees – fruit trees</b>								
	Mean rank difference	2.00	2.00	2.00	2.00	4.00	4.00	2.00	2.00
	Z	-0.628	-0.579	-0.579	-0.579	-1.147	-1.257	-0.590	-0.606
Forestry Extension	<b>Fruit trees - crops</b>								
	Mean rank difference	19.66	18.50	19.42	21.70	21.30	21.62	22.00	16.88
	Z	-5.224***	-4.951***	-5.145***	-5.721***	-5.637***	-5.912***	-5.904***	-4.758***
	<b>Trees - crops</b>								
	Mean rank difference	20.75	19.50	20.25	22.12	22.12	22.12	22.25	18.46
	Z	-5.493***	-5.171***	-5.332***	-5.826***	-5.826***	-5.913***	-5.926***	-5.120***

(i) Grouping variable: Department of respondents, (ii) Mean Rank Difference = Mean Rank of Fruit Trees by AES – Mean Rank of Fruit Trees by same rule used for calculating the values of Mean rank difference for others. The statistics significant at 1% level of significance is indicated by \*\*\*

agricultural extension and forestry extension is given in Table 4. The result illustrates very perceptibly that similar kind of interest was found for fruit trees among agricultural extension and forestry extension in delivering extension services that is, z-value (-0.628, -0.876, -1.180, 0.000, -0.286, -0.757, -0.096 -0.924) for education and training, technology transfer for production, protection and post-harvest techniques,

marketing, financing, infrastructure development and community mobilization. The small values for difference in Mean Rank are also supports the results.

#### Extension personnel field visits

For the effective delivery of extension activities

e.g. dissemination of modern knowledge, experimental demonstration and quick solutions to farmers problem; field visits plays an important role. The data describes in Table 5 that extension personnel's from both agricultural extension and forestry extension visits frequency was very low and irregular. The response to the frequency of extension personnel's visit to their fields, only one respondent from agricultural extension and two



**Table 4.** Association between extension services and area of practice among agricultural extension and forestry extension.

Extension services Area of practices	Education and training	Production technology	Protection technology	Post-harvest techniques	Marketing	Financing	Infrastructure development	Community mobilization
<b>Fruit trees</b>								
Mean rank difference	2.00	3.00	4.00	0.00	1.00	-2.38	-0.34	3.00
Z	-0.628	-0.876	-1.180	0.000	-0.286	-0.757	-0.096	-0.924
<b>Crops</b>								
Mean rank difference	18.58	18.50	19.00	22.34	22.54	20.75	21.62	16.08
Z	-4.977***	-4.951***	-5.059***	-5.886***	-5.951***	-5.636***	-5.755***	-4.583***
<b>Trees</b>								
Mean rank difference	-20.00	-18.38	-18.38	-19.88	-19.88	-20.25	-18.75	-19.50
Z	-5.280***	-4.966***	-4.966***	-5.249***	-5.249***	-5.412***	-5.030***	-5.146***

(i) Grouping variable: Department of respondents, (ii) Mean Rank Difference = Mean Rank of Fruit Trees by AES – Mean Rank of Fruit Trees by same rule used for calculating the values of Mean rank difference for others. The statistics significant at 1% level of significance is indicated by \*\*\*

from forestry extension visited few days in a week. An overwhelming majority that is, twenty one from agricultural extension and twenty forestry extension, of the respondents visit few days during a month, respectively. Among these respondents, the proportion of lower field staff is higher as compared to higher one in both. Almost same results were achieved by Luqman (2004) according to his 94.5% of the respondents made visit and contact on fortnightly basis. Visit on less than once a month was also reported by two respondents from each extension service in the study area. This frequency distribution showed that extension staff visits very partial. Frightening fact was also reported during the field survey that extension personnel commonly incline the big and influential farmers.

**Linkages between agricultural extension and forestry extension**

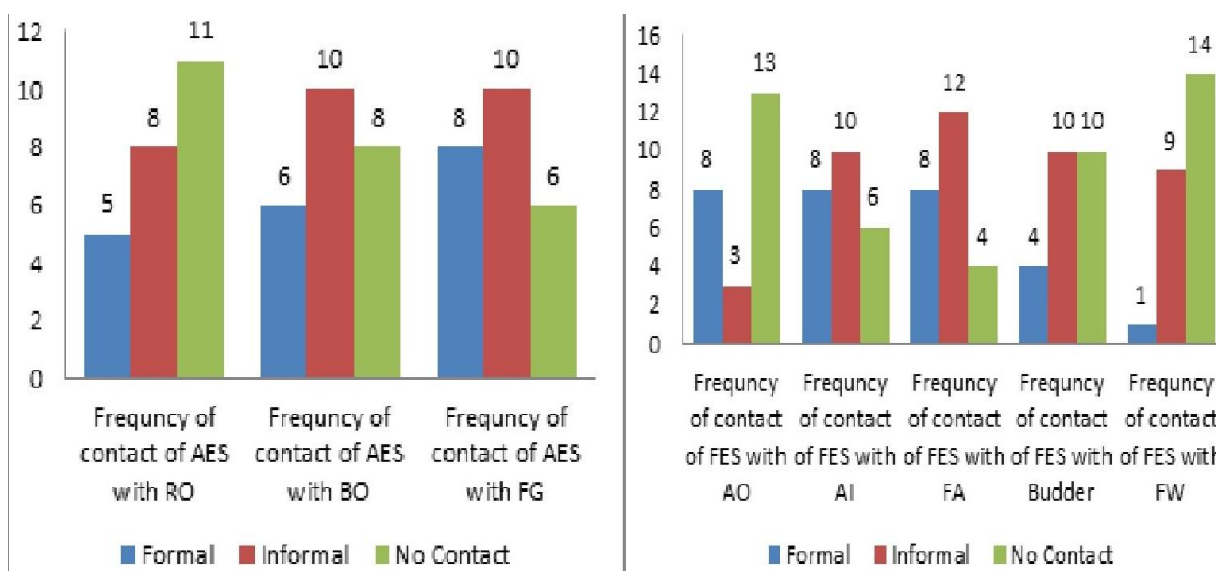
A close working relationship and institutional linkages among the different service providers in parallel field activities plays a vital role in providing high quality of services to the recipients in the area. Similarly, extension services provided by agricultural extension and forestry extension especially in the highland or mountainous region in some cases are very much interlinked e.g. education and trainings especially raising fruit trees nurseries, soil conservation practices, watershed management etc. dissemination of new and modern knowledge through technology transfer, marketing and more are in the way of life of farmers in regions. Figure 3 is describing the

frequency of contact among extension personnel's and their type of contact that is, formal and informal of agricultural extension and forestry extension in the study area. Majority of respondents from agricultural extension they don't have any type of contact, while few have formal and informal contact with range officers from forestry extension. Similarly, most respondents from forestry extension don't have any contact, and few have formal and informal contact with Agricultural Officers from agricultural extension in their working areas. Figure 3 also presents that a considerable number of respondent from agricultural extension do not have any contact, whereas most has informal and few has formal contact with block officer of forestry extension in the area. Also, some respondents do not have

**Table 5.** Distribution of the Respondents according to their field visit.

Position of respondents	Frequency of visit to working territory			Total	
	Few days/week	few days/month	less than once a month		
Agricultural Extension	Agric officers	0	4	0	4
	Agric inspectors	0	1	0	1
	Field assistants	1	15	1	17
	Budder	0	0	1	1
	Field workers	0	1	0	1
	Total	1	21	2	24
Forestry Extension	Range officers	1	5	0	6
	Block officers	1	7	1	9
	Forest guards	0	8	1	9
	Total	2	20	2	24
<b>Total</b>	<b>3</b>	<b>41</b>	<b>4</b>	<b>48</b>	

Source: Field data.



**Figure 3.** Frequency of contact with type of contact between extension Personnel's.

any contact, most have informal and few has formal contact with Agricultural Inspector in the area. Most interestingly, Forest Guard from the forestry extension has the highest frequency of formal contact that is, eight respondents from agricultural extension as compared to others. Informal contact frequency with forest Guards was reported high and few have no contact. On the other hand, Field Assistants from agricultural extension have good frequencies of formal and informal contact with forestry extension personnel's. There were only four forestry extension personnel's who don't have contact with Field Assistants in the area. Considerable frequency of contact of forestry extension workers with Budder and

field workers from agricultural extension was reported as informal contact.

**DISCUSSION**

Pakistan, like many other developing countries, has inherited an enormous rural socio-economic sector blessed with rich natural resources (Mallah, 2005). It is the fact that huge proportion of its population is involved, directly or indirectly, in farming and related activities. More than 70% of the country population resides in rural areas and relies on this sector directly or indirectly (GoP,

2011). In rural highland areas agricultural extension and forestry extension are the main institutional components as they promote the transfer and exchange of information that can be useful to the farming community and ultimately for the agriculture and forestry development of the country. Unfortunately, in many countries like Pakistan there is a major problem of weak linkages among the extension services of agriculture and forestry departments (Sharma, 2003; Mubangizi et al., 2004; Jan et al., 2008). The purpose of this study was to explore the common areas of practices in agricultural and forestry extension services which will be helpful in establishing strong linkages and also to probe out the factors hindering the effectiveness of extension services provided by agricultural and forestry extension system.

The demographic characteristics of the individuals working in field-related jobs such as agriculture, and forestry are of primary importance (Hassan et al., 2002). The analysis of the demographic characteristics of the respondents reveals that majority of the respondents from agricultural extension were middle-aged people while majority of respondents from forestry extension was in the category of old people. During discussion, it was reported that this age differences created the superiority attitude among the respondents of agricultural extension due to their argument that they are more energetic and effective in delivering the extension services while older age took less interest in work and more in talking. The argument is also supported by Basant (1988) and Tsur et al. (1990) who found out that a person with lesser in age the quicker will be his acceptability and response to any action, mainly in communication and understanding. It is a fact that through higher education and good communication skills desirable changes can bring in the human behaviour. From the results it is evident that most of the respondents (Agricultural Inspector, Field Assistants from agricultural extension and Range Officers, Block Officers, Forest Guards from forestry extension) had low level of education that is, diploma in agriculture and forestry. It was also discovered by Glendinning et al. (2001) that lower education level may also act as dominant variable affecting the communication and linkages. The importance of position and hierarchy in carrying out diverse activities of a job is vibrant everywhere in the world. In other words, the competent authority's instruction and advice are generally more acceptable. From the data, it is clear that majority of the respondents were in lower hierarchy that is, Field Assistants from agricultural extension and Block Officers, Forest Guards from forestry extension. Moreover, during the discussion with respondents, it was found that they have minor role in decision making regarding the field related activities. The analysis of the data shows that there is a major difference of experience of working in field related activities carried out by extension personnel's from agricultural extension and forestry extension in the in the study area.

Agriculture and forestry are generally considered as parallel activities where many institutions are working for their development. Effective linkages can be established among these different institutions by finding out their common areas of interest. The analysis of data collected for this study shows that agricultural and forestry extension have common interests in fruit trees where they both offer similar kind of services such as education and training, technology transfer, marketing, financing, infrastructure development and community mobilization. Most of extension personnel's from agricultural and forestry extension considered their tasks related to agricultural crops and trees respectively. The argument is supported by Hedjazi and Veisi (2007) who concluded that agricultural extension has a strong reliance to exchange information among farmers regarding agricultural crops and Mead (1995) mentioned that forestry extension is used to advocate for tree plantation. During the discussion with respondent from agricultural extension in the field survey it was reported that most of the time extension personnel's from forestry extension ask technical help from them regarding fruit trees plantation especially the time of sowing of nurseries and transplantation to field on the basis of informal contact.

The extension staff visits to farmer's field are important not only for farmer's education but also for diagnostic services. Follow up of every activity is inevitable for smooth running and feedback. The common language and learning by undertaking new things are also key factors for the success of field visits (Khan and Akram, 2012). The analysis of the data shows that majority of the respondent both from agricultural extension and forestry extension visited their clientele only few days in a month. An in-depth investigation into this insignificant number of visiting time revealed that there was a limited field staff and they were engaged into other official works assigned by their perspective departments. These negligible visits to the working territories of field staff on one side disturb the extension farmer contact but also affect the decision to participate in extension activities (Moulick et al., 1966), moreover, it is responsible for not having linkages with stakeholders in the area.

From the data of the field survey, it is very clear that majority of the extension personnel's from agricultural extension and forestry extension don't have any contact in the field. The analysis of the qualitative data collected during the Key Informant Interview session explored that linkages were very weak due to inter-departments biased atmosphere in achieving the goals and objectives of public service extension providers especially in agriculture and forestry. Shahbaz et al. (2007) reported that due to lack of effective extension system and weak departmental linkages the mountain farmers in NWFP use old age technology of crop production and tree plantation. Categorically, the data establish the fact that weak formal and informal contacts between agricultural and forestry extension are the key factors hindering the

effectiveness of their services and community mobilization.

## Conclusions

It was concluded that majority of the respondent's from agricultural extension belonged to young age group whereas from forestry extension majority belonged to old age group. A large majority (consisting of Agricultural Inspectors, Field Assistants from agricultural extension and Range Officers, Block Officers and forest guards from forestry extension) had educational background as diploma (12 years education) in agriculture and forestry subject. Fruit trees were the common area of practices where both provide extension services of education and training, technology transfer about production, protection and post-harvest techniques, marketing, financing and community mobilization among the farming community. Both departments were also carrying-out the above services for fruit trees in particular while crops and other trees in general. Most of the field staff visited their respective working territory from few days during a month. Weak formal and informal contacts between agricultural and forestry extension services were also found.

## Conflict of Interests

The author(s) have not declared any conflict of interests.

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*Full Length Research Paper*

# Institutions of agricultural land acquisition and transfer: Experience from Central Highland of Ethiopia

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**Access to agricultural land is a matter of life and death among the peasant society. Control over this resource is also the most disputable and contentious aspect of rural setting in Ethiopia which affects the overall socio-economic and welfare status of an individual and a group. This research is an attempt to identify and analyze both formal and informal institutions rendering agricultural land acquisition and transfer in the Central Highland of Ethiopia, using Tole District as a case study. The key findings of the study revealed that the majority of the highland and midland agricultural land scarce households are predominantly acquiring agricultural land through inheritance from their parents followed by donation from relatives, sharecropping, renting-in, local administrations, and acquisition from the combination of these mechanisms. Such social capital was found to be strong for sharing and accessing the land. Thus, interventions and policies need to promote sustainable livelihood of the area, must recognize the role of formal and informal institutions that facilitate land transfer among farming households. This can be achieved through the supply of credits and improved agricultural technologies, and other specific policy instruments. These entail that the best approach is to promote a package of integrated agricultural and non-agricultural livelihood strategies for small landholders.**

**Key words:** Central-highlands, Ethiopia, Tole, land, acquisition, Institutions.

## INTRODUCTION

Agricultural land determines an overall socioeconomic status of an individual or a household in the agrarian society. In other words, agricultural land is the fundamental asset of peasant property and a major source of livelihoods in the rural Ethiopia. According to Teklu (2006), land is one of the major conventional inputs that limit agricultural production and the main source of rural livelihoods since options other than farming are scarce.

Lack or shortage of this resource can trigger a loss of

livelihood characterized by food insecurity, low living standard, inaccessibility to public services (extension services, credit, farm inputs and technologies) and hence inability to uplift oneself from the abject realm of poverty (Grover and Temesgen, 2004; Chambers and Conway, 1992). It can also lead to disputes and tensions. Landless people sometimes attempt to acquire land in 'Guerrilla' system analogous to what Hutter and Hoffmann (2011) used in marketing which often result in disputes and forceful evictions (Ayaleneh and Korf, 2007). In order to

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survive under such scarcity, farmers often engage in formal and informal institution of land sharing and transfer; this is because capable farmers are not passive who voluntarily live under poverty.

Until the 1974 'land to tiller' based slogan of land reform, land distribution was highly unequal (Bereket, 2008). The reform nationalized all land and distributed it to peasants owning use right. The operationalization was undergone until 1977. This reform, to some extent, solved the problem of land based class differentiation (Abebe, 2004). The use right to peasant and state ownership persisted for four decades despite enormous change in political and economic milieus. The reason behind the curtain is that, historically, the issue of land is more of politics and still full of contentions (Crewett and Korf, 2008; Hussien, 2004).

According to research report on land tenure and agricultural development in Ethiopia by Ethiopian Economic Association/Ethiopian Economic Policy Research Institute (EEA/EEPRI), landholding size is less than a hectare for the majority and the land-labor ratio (active labor force) on average is as low as 0.38 hectare in the country. The number of landless farmers is also about one in ten at national level and worse in the highly populous highland areas of Ethiopia (EEA, 2002:34). Like most highlands in the country, Central Highland of Ethiopia has a serious shortage of farmlands and every possible piece of land is put into cultivation. Increasing population density coupled with the lack of alternative employment opportunities led to progressive land pressure and subsequent shrinking of individual landholdings. The scarcity of cultivable land is a serious problem where around half of the studied households accounted for landlessness (EEA, 2002:33). They own landholding size less than a minimum area required for minimum food production. Another study also estimated that 30 to 40% rural active labor forces are either landless or rely on uneconomical size of land and severe in the densely populated highland areas (Teklu, 2003). It was also evidenced that the land to person ratio in the past four decades was sharply declining.

The prevalence of extreme land pressure has already resulted in vast deforestation and cultivation of unsuitable slopes and tremendous social disputes in the study area, causing severe environmental damages and social unrest (Dessalegn, 2009), which make the future prospects of agriculture look bleak without generating either non-agricultural activities or instruments of rewinding the possible hazards (Reta and Ali, 2012). This has both policy and development implications on revitalization of alternative institutional arrangements and viability of such institutions to overcome the prevailing farmland scarcity.

Therefore, there are two sets of rationale underpinning this research project. First, for those peasants who do not have sufficient farmland in the study area, access to agricultural land is paramount critical in order to survive in the farming environment. It could be through formal and

informal institutional arrangements so as to share and transfer agricultural land for the new entrants and landless farmers. Such sharing and transfer mechanisms are underrated by the policymakers and development practitioners despite the intensive research works and policy debates on the importance of agricultural land for the survival of rural livelihood and agricultural development.

Thus, there is a critical need to assess these institutions in the context of increasingly diminishing agricultural land and its potential viabilities and adverse effects on sustainable rural livelihoods in the Central Highlands of Ethiopia. Second, although there are ample studies on rural livelihoods and agricultural land scarcity, little is known, for instance, about the roles of institutions of agricultural land sharing among peasants in general and the study area in particular. With this motivation, this study contributes to policy debates on how to enhance these institutions and to minimize the problem of landlessness or to think an alternative livelihood option to land scarce and landless farmers.

The overall objective of this paper is to identify and analyze local institutions serving agricultural land acquisition and transfer for landless and land scarce farmers in study area. Specifically, it identifies both formal and informal institutions rendering agricultural land acquisition and transfer, and analyzes the outcome of these institutions to resolve the problem.

## **AGRICULTURAL LAND INSTITUTIONS: A LIVELIHOOD PERSPECTIVE**

Rural land is an asset of great importance in Ethiopia. High proportions of income, employment and export earnings stem from agricultural production and other land-based activities. Thus, control of agricultural land is a life and death concern for peasant societies. In the absence of much economic diversifications, access to land and other natural resources is of special importance for improving the livelihoods of poorer groups and providing greater security (Samuel, 2006; EU, 2004).

It is disappointing that the increasing population in the rural areas was absorbed in agriculture through levelling down of holdings, rather than through alternative forms of employment. Regrettably, population growth in Ethiopia could have been supported by rural non-farm employment creation, but this has not happened so young adult people remain in rural areas either unemployed, as landless labourers or as sharecroppers (Samuel, 2006). The peculiar attachment of Ethiopian farmers to their land may have negatively been affecting the mobility of peasants out of farming and subsistence living. This is mainly because of clutters of the institutions of land acquaintance and transfer coupled with absence of attractive non-agricultural employment opportunities like industry and commerce (Deininger et al., 2006).

Moreover, there is a fear and the belief of losing land if the farmer engages in non-farm activities. Besides, rural-urban movement as a strategy is discouraged by state. Still, rural people could not find alternative means of livelihoods (Solomon and Mansberger, 2003).

Despite rural land is covertly shared and transferred in different parts of the country in response to land shortage through local institutional arrangements, rural land is the property of state for the last four decades and still so. The justifications provided by policy makers and state to keep rural land under public ownership is the assumption that rural land plays a social security role (that is, in terms of guaranteeing some form of livelihood through granting free access to a piece of land).

There are discursive arguments about the current policy and the constitution of Ethiopia. The argument is pacing political views and seeming propositions. Two of them are polarized and one 'muddle-through' propositions on land issues and livelihoods dynamism of rural people viz, the '*confinement*' (private ownership of land); '*paternalistic*' (state property) views/ propositions; and the '*associate ownership*' (mix of the two). The view may be practically naïve for the smallholders but worth discussing. While '*confinement*' is a proposition supported by international donor agencies, opposition parties and many intellectuals; the proponents of '*paternalistic*' are the government, the ruling party and some scholars.

### Confinement proposition

A typical argument that could characterize this claim, at a glance is echoed by Dessalegn Rahmato, who is not actually the proponent of the idea:

'The land system has discouraged peasant mobility and trapped the population in the rural areas. Improvements in livelihoods are impossible unless a considerable portion of this population is released from the land and moves out of the rural areas. The greater mobility of peasants out of agriculture will stimulate the greater mobility of land. Land will be able to move "freely" from those who cannot use it efficiently to those who can. The destination of a mobile peasantry will be the urban area' (Dessalegn, 1999:10).

The above proposition seems to imply that private ownership of land is a panacea for the interwoven agrarian maladies through promoting land transfer to more efficient farmers, encouraging peasantry mobility, increased land resource management, and improved rural livelihood. It is also widely suggested by the view that land is vanishing because as long as the tenure system continues to confer little or no security, farmers do not and will not care about the soil and productivity of their plots. The researcher questions this view that: (i) the

problem of rural poverty and rural livelihood deteriorations can not only be attributed to the problem of land tenure arrangement alone, but beyond though a good land policy is a priority to be settled; (ii) assuming farmers are abandoning farmland is very generalist and simplistic as farmers know the criticality of agricultural land. Thus, problem of tenure security is not basic argument as farmers still run short of other resources to invest on it.

In addition, secured and increased access to land and natural resources for the landless and 'land-poor' families is a key means of achieving livelihood goals. It also helps to broaden the economic opportunities available to them rather than automatic moving out of rural areas. Yet, the majority of poor people in developing countries still live in rural areas despite growing urbanisation and secured land. The argument here is, in Ethiopian context, improved access to land alone is not enough to improve rural livelihoods; it must be supported by adequate accompanying policies and related measures (access to credit and information, markets, agricultural technologies and extension, favourable economic environment).

### Paternalistic proposition

On the other hand, the government and the policy makers think differently and allege that 'if the current policy were changed in favour of private ownership, farmers are forced to resort to what is called distress sales and inundate the urban centres only to face the attendant social ills that are characteristic of such moves' (Solomon and Mansberger, 2003:4). To put it in the other way, the current policy is firmly devised because of the need to protect farmers from irreversible loss of their critical asset by the economically forceful capitalists. This is what can be called the '*paternalistic*' proposition.

Here, it can be argued that peasants are not as such delicate. They are rational in decision making on this key livelihood asset and many others in their lifetime. Moreover, it is possible to setup ownership right to farmers by putting in place laws and policies that prevent the imagined distress sale and inundation, and restrict the extent and scope of land marketing and its smooth operations like Japan (Ouchi, 1965), for example. As a result, this line of debate is also a simplistic and a mere generalist in the sense that: first, it missed respects for the farmers as empowered social force with the right and capacity to question their roles and services that is, the farmers are considered incapable to decide on their own resource but rather best governed by policy statements. Second, there was no attempts and willingness to create a room for farmers to give opinions on the matter so as to inculcate the public opinions in the policy formulation (<http://www.fssethiopia.org.et/onlinedebate>, 2010) for extended debates and opinions.

Being the foundation of second proposition notwithstanding, it is the ambiguity of the policies,

constitutional provision on land, and ideologies. Article 40 and sub-article 3 of the 1995 Constitution of the Federal Democratic Republic of Ethiopia, which is the base for the proposition state: *“The right to ownership of rural and urban land, as well as all natural resources, is exclusively vested in the state and in the people of Ethiopia. Land is common property of Nations, Nationalities and Peoples of Ethiopia and shall not be subject to sale or other means of exchange”* (FDRE, 1995:98). Article 40 and sub-article 4 implicitly state the continuation of redistributions and reallocations of land as: *“Ethiopian peasants have right to obtain land without payment and the protection against eviction from their possession. The implementation of this provision shall be specified by law”* (FDRE, 1995:98).

Furthermore, FDRE (2001:11) document on Rural Development Policies, Strategies, and Instruments details the acquiring of land sufficient for peasants' livelihoods for free. Hence, any Ethiopian who wants to earn a living by farming has a right, which shall not be alienated, to obtain, without payment, the use of land, and the right of the government to redistribute land when the need arises. Nevertheless, the majority of young men and women farmers are either landless or simply relied upon a small plot of land on subsistence basis. Some are engaged in informal sharing and transfer through local institutional arrangements, others are acquired through formal and legal procedures and many others are landless.

Yeraswork (2000:286) stated that it is impractical simultaneously to uphold 'the right of every Ethiopian to provide agricultural land to those who want to engage in farm', and 'to respect the inviolability of existing holdings'. He further argued that these two cannot be synchronized for the simple reason that there are no reserve lands that can be recently distributed among land scarce farmers. As a result, the two rights are incompatible when per capita holding dwindles; population is increasing and non-agricultural sector of the economy is not expanding with the pace of absorbing the additional numbers. Given these situations, one may expect that the landless and land scarce farmers could claim their constitutional right to land. Hence, providing new farmers with land would necessarily imply the redistribution and reduction of existing holdings.

Summarily, the current constitution based argument resulted in sets of constraints than economic progresses. Crewett and Korf (2008:206) substantiated its negative effects as follows:

Broadly speaking, it is argued that state ownership of land yields negative effects on land productivity and therefore produces lower efficiency levels than would be achievable with the working of a private land market. In particular, those in favour of private property rights assert that state ownership provides barriers to full-scale efficiency, because of the following: it prevents the emergence of a dynamic

rural land market that allows entrepreneurial agents to access credit and land, it discourages farmers on marginal land to out-migrate and ties the farmer to inefficient uses of his land, which subsequently leads to fragmentation of plot size, overpopulation in the rural areas and resource degradation, and it perpetuates the legacies of the *derg* regime's redistribution programmes that are creating tenure insecurity and discouraging land owners from investing in sustainable resource use.

### **Associative ownership**

There is also a third proposition though not well developed in Ethiopian debate on land issues and peasants livelihoods (Dessalegn, 1999), that combines the above two and conceives 'associate ownership'. Though it may be sound and viable option, it is not as such brought into rural livelihoods and development forum to curb the agricultural land problems in the country. It upholds and recognizes local and informal land sharing and transfer. As far as it is operating at the gate of majority of peasants, it should not be denied. It has been also evolving from time to time.

This line of debate needs to be strengthened as land issue within a nation has diversity of implications in different contexts and purposes of the users. The pastoralist, agro-pastoralist, crop-based farmers, and/or small-scale and large commercial farmers demand a particular policy room to motivate agricultural land transfer, investment on agricultural growth and thereby rural transformation. These intermediate options (inheritance, sharecropping, land registration, consolidation of fragmented plots and validation of an informal rental market that is already operating covertly) have the potential for positive synergies between livelihood 'protection' and 'promotion' for small farmers (Devereux and Guenther, 2009:17).

Back to the two extremes, they are irreconcilable as far as the Ethiopian land policy is indoctrinated in the country's constitution and becomes a political gadget rather than economic resource. Therefore, one can conclude that both extremes pretend to answer the question how to promote a dynamic rural economy and improve rural livelihoods on the uniform assumption that local and informal land acquisition and transfer institutions have no role to maintain and resolve the problem of land scare and landless farmers. Rather, both attached to the notion of formal institutional arrangement that agricultural land is either kept under state or sold like any other means of production. Nonetheless, peasants' livelihood dynamism is not as simple as this rather becoming a challenge to sustainable rural development. It bears a complicated scenario if it is undermined and/or completely ignored informal institutions. In view of this, a reconciling proposition is the selective context-based

reconsideration of policy, associative ownership, to build up on the best local experiences and flexible macro policy for agrarian transformations. At micro level, it is also imperative to accord that heterogeneity in livelihood strategies and uneven asset endowments among households can create heterogeneous livelihood paths (Tschakert et al., 2006:807). Hence it is better to utilize appropriate and suitable institutional arrangements. Indeed, only the better-endowed households that have managed to diversify into more lucrative farming and non-farming activities and have access to critical livelihood assets are likely to survive in the rural area without looking for land transfer and sharing from their families. In this regard, this research comes up with empirical evidence to challenge the first two propositions and support an associative ownership as institutional arrangement to acquire agricultural land through identifying and analysing both formal and informal institutions as well as assessing the outcome of these institutions on the peasants' livelihoods.

## THEORETICAL AND CONCEPTUAL FRAMEWORK

Land is the fundamental basis of the livelihoods of the farming population. Agricultural land (also agricultural area) denotes the land suitable for agricultural production, both crops and livestock. It is one of the main resources of food, income, and simply everything for the people engaged in agriculture. An old Japanese saying goes, "a farmer without land is like a man without a soul" (Dessalegn, 1999). That means the state has no right to land and thus it unanimously belongs to the users. Agricultural land is scarce when it is economically limited in size for accomplishing the needs of the holder and supports his/her livelihood. However, it is not the size of land that matters but the farmers' decisions to adopt new technology, select enterprise and other socio-economic characteristics (Piya et al., 2012), such as social bonds and relationships called social capital.

Social capital refers to social resources which farmers use to support each other in seeking survival during shortage of agricultural resources, mainly land sharing and transfer. This comes from formal and informal institutions (inheritance, land certification, contracting and sharecropping), district and local level organizations. The participation in informal and formal groups (member of Iqub, Edir, Jigii and Saving and Credit Organizations), social relations, networks and connections, reciprocity and interchanges facilitate cooperation, reduce costs of transactions, enhance natural resource management, and provide the base to create security networks between those less privileged.

Institutions are rules that limit and permit free interaction of people thereby exerting pressure on the freedom of individuals and societies for the safety of all. It implies that institutions are both constraints and opportunities for actions, for institutions are systems of

collective rules and practices that enable individuals to work together for a common purpose. North (1990) explained that institutions are "rules-of-the-game" and they are also organizations that play the games.

Nonetheless, the term institution has never been easy to be defined in terms of 'rule-of-the-game'. In the context of this paper, institutions are conceptualized as both formal and informal practices, arrangements or mechanisms that enable sharing and transfer of agricultural land for land scarce and landless farmers.

Formal institutions are mechanisms and/or arrangement of land acquisition through distribution or redistribution by different level of state authority. It is regulated by district and local administrations. It also includes formal contractual agreement of land market and sharecropping. Informal institutions of land sharing and transfer include inheritance, donation from family, informal rent-out/lease to other farmers, sharecropping without formal agreement. It is a consent by the two parties in exchange and transaction without the intervention of district or local administrations.

The paper adopted Sustainable Livelihood Approach (SLA) to underpin the institution of land acquisition among the agricultural land scarce farmers. It also captures the roles these institutions play in land sharing and transferring. The reason is that there is a radical junction between the convectional institution analysis and SLA. While the conventional one views a linear, research → policy → practice model; SLA could be triangular type where all components inform each other (Solesbury, 2003; Chambers and Conway, 1992). It also shifted the development philosophy from traditional —resource-focused development to vulnerability analysis.

The framework, therefore, highlighted four interacting elements: contexts; mediating processes and institutions; strategies of the land scarce farmers; and the outcomes of the institutions (Scoones, 1998). It attempts to address these concepts *vis-a-vis* the role of different land sharing institutions. The interaction is shown in Figure 1.

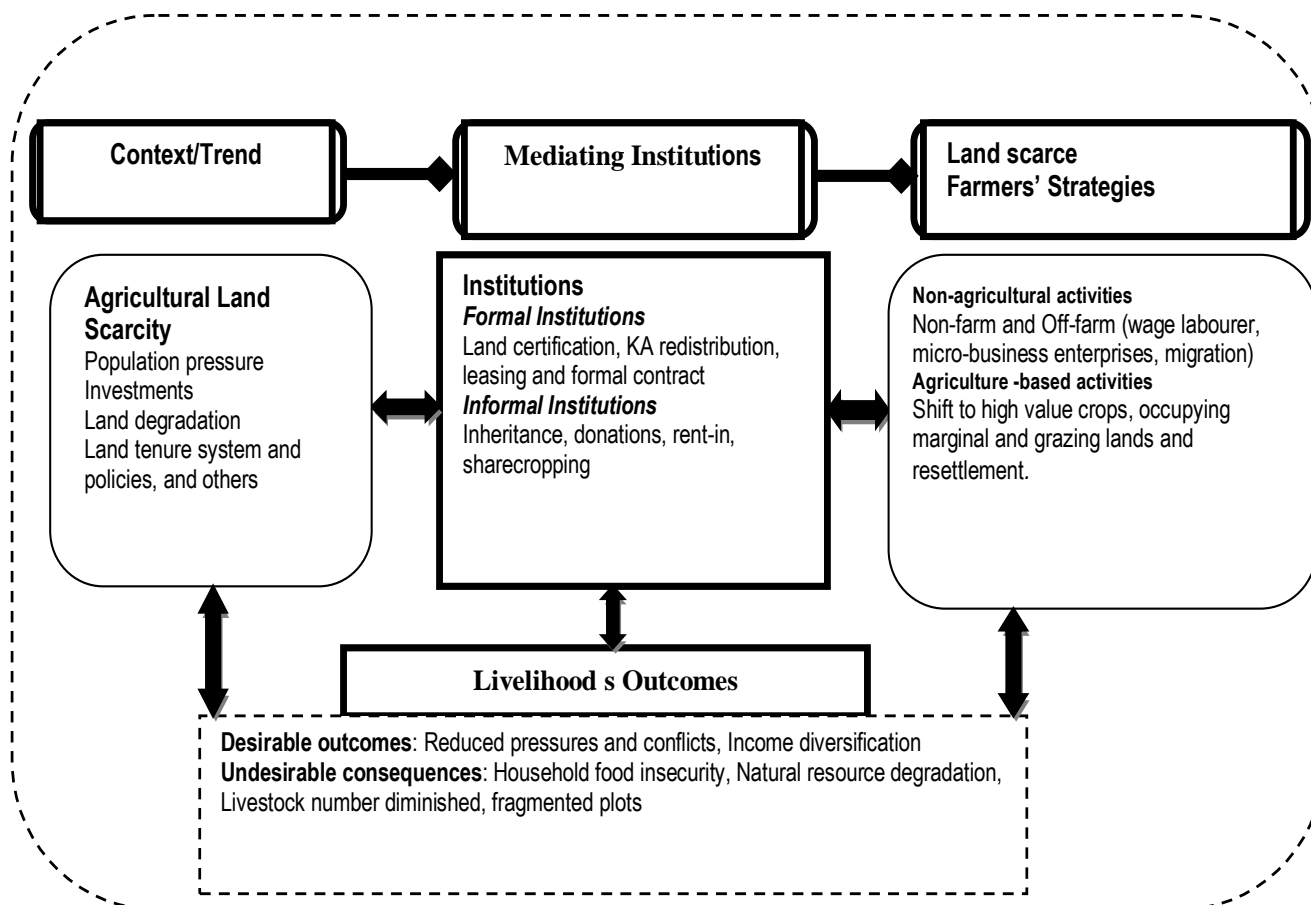
## RESEARCH METHODOLOGY

The study employed qualitative and quantitative research methods combined in a creative and logical manner so as to fully capture pertinent information to attain the research objective. The study was designed as a case study. The data for this study were gathered from two agro-ecologically distinct rural communities and gender disaggregated household heads in the Tole District to understand the institutions of land sharing and acquisition. The field study combined Key Informant Interviews (KIIs), Focus Group Discussions (FGDs) and Household Surveys. While semi-structured checklists were designed to manage the FGDs and KIIs, structured and semi-structured interview schedule was developed to undertake the household survey.

### Site selection and sampling procedures

The study involved a multistage sampling, that is, a combination of purposive, stratified, and simple random sampling procedures to





**Figure 1.** A framework to examine institutions of agricultural land acquisition and transfer. Adapted from Degefa (2008); Scoones (2009; 1998); DFID (2000); Ellis (2000).

select the study area and household sample. First, the district was purposefully selected. Then, based on agro-ecology, the district was divided into two. These are midland and highland agro-ecologies (AEZs). Accordingly, from each agro-ecology, one top most populous *Kebele* -lowest administrative unit in Ethiopia (the smallest land-active labor force ratio), was sampled. Consequently, *Kursit Areda Leqa* (KAL) *Kebele* was selected purposefully from midland while *Malima Tume Chirfa* (MTC) was sampled to represent the highland AEZ. The two *Kebeles* are further stratified into two as female-headed-households (FHHs), and male-headed-households (MHHs) to obtain gender disaggregated data. Finally, simple random sampling technique, using a lottery method, was used to select 100 households from the two *Kebeles* for the individual interview.

#### Data analysis

In order to analyze and present the data, a combination of qualitative and quantitative method was used. Statistical techniques such as cross tabulations, averages, standard deviations, and chi-square test were used for quantitative data analysis. Qualitative information was organized and constructed coherently and analyzed. Narrations were also used for qualitative data analysis. The results of the key findings were displayed in the form of percentages and tables.

## RESULTS AND DISCUSSION

### Basic characteristics of the household heads

The respondents' ages are categorized based on the reference year when the last land redistribution was carried out in the area, which goes back to 1977. Accordingly, the age of the respondents are categorized into four. The first group is 19 to 33 years old which comprises 58% of the household surveyed. The second category aged between 34 to 48 years, which constitutes 34% of the total respondents. The third (49 to 63 years) and the fourth (above 64) age categories are only 6.7% and 1.2% of the total respondents, respectively. These vividly depict that majority of farmers who face problem of agricultural land are the younger group. This group did not acquire land through the radical land reform of formal early land distribution of the 1977. Moreover, to get a clear picture of gender inequality, a gender disaggregated data about 30% of the respondents were Female Headed Households (FHHs).

In this study, two agro-ecologically distinct communities

were studied for the sake of comparison. Accordingly, 60% of the respondents are from Midland and the rest 40% are from Highland agro-ecological Zone. Majority of the land scarce farmers, 60% of Female Headed Households (FHHs) and 74.25% of Men Headed Household (MHHs) have lived in the area for more than 25 years. None of the MHH was planning to leave the area in contrast to 6.25% of FHH who will leave the area after a while to seek for more remunerative urban jobs. Likewise, 43.75% of FHHs were not happy and do not prefer to live in their current villages because they are too poor to earn their living sufficiently from the current livelihood activities compared to MHHs. Despite the serious shortage of farmland, the figure was fairly low (4%) for the MHHs. The justification behind this figure was that they prefer the climate, the strong ties of local institutions like Iddir, sharing among relatives, respects for their place of birth, and other amenities.

As a result, they preferred to live in their village relying on informal institutional arrangements to get farmland and earn a living. This was also the very reason why they rejected the government's offering of the resettlement program to other zones of the region where land is relatively abundant. Statistical test was also employed whether the period of residence in the village has an association with landholding size. Accordingly, the longer the period of residence, the larger could be the landholding size of the respondents. This either may be due to the tendency of the longer residents to acquire land through different means that is, formally through the 1977 land distribution or informally inheriting or obtaining through different arrangements. In addition, the different ethnic groups are inter-marrying and living in harmony. They are also almost sharing the same culture, social, and economic resources and services.

### **The trend and context agricultural land sharing and transfer**

Historically, both in the imperial and socialist regimes, female farmers were very unlikely to access and control land and land resources. They were often denied their right in their communities and the law did not guarantee equal right over land and land resources. They could not inherit farmland from their family as men did. The FHHs' Focused Group Discussants desolately put that they were either divorced or widowed. When they divorced, they were denied access to share their property including land in most cases. Some FGDs participants reported that they were often intimidated by their former husbands not to go to court for legal process. Widowed women were usually expelled from their late husbands' locality as they were considered outsiders. The close relative of the husband inherits the land and the women either go back to their parents or flee to urban centers. However, the situation is immensely improved now and they have almost equal rights that are guaranteed by the FDRE law and the protection by their society- local institutions. The

FGDs probed both FHHs and MHHs interviewees who stated that presently women have better right than before over land and other properties due to the growing awareness, despite much dissatisfaction.

The youths are the other category experiencing the predicament of land scarcity. It is the worst of all problems for the rural youth farmers. They are either not born or not eligible to get land during the 1977 land redistribution. Of course, there was no land redistribution after the 1977. Key informant interviews with elders depicted that the size of agricultural land, including settlements and grazing lands, provided for a couple was around 2.67 hectares and nearly a hectare for a single farmer or dependent farm family during the redistribution and now it is dwindled to under a hectare as it was shared and transferred to their children.

Statistical data (CSA 2007, 1994, 1984) depicted that the farming populations are increasing, new farming members are born and indeed, land could not be expanded. As a result, the same land has to be redistributed among family members now and then. In other words, it was fragmented from year to year, as young farmers have to share agricultural land from their family. It was also found that none of the respondents in the survey practice fallowing, the customs that traditional land fertility restoration farming system depends on. The agricultural land has to be used intensively without fallowing and applying insufficient fertilizer (Samuel, 2006). In turn, productivity of land is immensely declining.

In order to define what could be the minimum landholding to survive in the village, relevant information was collected using varieties of instruments and sources. The instruments include: interviews with key peasant informants and with about half a dozen of local public officials, and FGDs among a number of FHHs and MHHs. Consistently, it was suggested that the potential productivity of land in the highland and midland is not the same. According to the District Land Administration and Environmental Protection Office's land fertility classification, while the highland area is poor due to severe soil erosion and the type of soil, the midland is relatively better-off. Thus, the minimum hurdle at the current level of technologies also varies with a particular AEZ. The threshold is below a hectare in the midland and less than two hectare for the highland counterpart.

In both cases, the largest proportion of their holdings was allocated to cultivation of different crops. In the highland areas, the sampled land scarce farmers are holding a hectare with a maximum of two hectares and minimum of 0.16; whereas in the midland, the average is 0.62 and maximum and minimum holdings are 1.0 and 0.16 hectares, respectively. When the cultivated and grazing lands are taken into consideration, it gives a different scene. The average grazing land in the highland (0.36 ha) was double of the midland (0.18 ha). It is not surprising that the cultivated land (0.64 ha) was greater than total holding (0.62 ha) in the midland. This was

**Table 1.** Landholding size (in ha.) and use patterns in 2009/2010.

Agro-ecological zone (n=100)			Landholding	Cultivated Land	Grazing Land
Highland- Malima Tume Chirfa (MTC)		Mean	1.0826	0.9020	0.3620
		Std. Deviation	0.58285	0.43229	0.23136
		Minimum	0.16	0.16	0.17
		Maximum	2.00	1.50	0.43
Midland- Leqa (KAL)	Kursit Areda	Mean	0.6186	0.6414	0.1825
		Std. Deviation	0.23716	0.31527	0.08706
		Minimum	0.16	0.16	0.08
		Maximum	1.00	2.00	0.30
Total		Mean	0.8104	0.7470	0.2726
		Std. Deviation	0.47255	0.38651	0.19786
		Minimum	0.16	0.16	0.08
		Maximum	2.00	2.00	0.30

Source: Own Survey, 2010.

mainly due to renting-in and engagements in sharecropping along with their actual holdings. In sum, while both the size and the per capita grazing land was dwindling, the cultivated land was increasing at the expense of grazing land but per capita holding was diminishing. This trade-off put land scarce farmers in vicious cycle of poverty and vulnerability to agricultural land dearth. Table 1 illustrates the landholding size of the sampled peasants in the study area.

### **System of land acquisition**

Table 1 depicts that the average landholding size in the highland Agro-ecological Zone (AEZ) is 1.08 hectare and 0.62 hectare in the midland. The FHHs and MHHs are tilling 0.76 and 0.82 hectares, respectively. The majority of the land scarce farmers acquire agricultural land through inheritance and donation from their family. They are negotiating their family to get a slice of land to engage in agricultural activities. It is simply sharing among the family members, which is not legal but it is the local institutional arrangement for the extended family to overcome the dearth of the resource. This became a prominent system of land transfer.

The current holdings of the land scarce farmer also tell of the same scenarios. There are several mechanisms that the land scarce and landless farmers use to obtain agricultural land. These take the forms of gift, inheritance, and acquisition through Kebele Administration and the combination of them. Some of the acquisitions are on permanent basis while others are for given periods of time that do not exceed three years (Table 1).

Quite more than half of the respondents (52%) obtained the current holding through inheritance from

their parents, which also significantly vary in AEZs, that is, 45% in the highland and 56.67% in the midland. This was followed by acquisition through donation from late parents and other close relatives (14%) who make up 20% of highland and only 10% in the midland. There were informal sharecropping arrangements in the village or outside the village in both AEZs that comprise 12% of the respondents.

Farmers in both AEZs were also obtaining farmland through lease/renting-in (9%) for a cropping season. Only a few farmers (7%) acquired farmland through formal arrangement - the 1977 land redistribution. The combination of inheritance, sharecropped, and rented-in the mechanisms also shares 2% of land acquisitions. Thus, informal sharing and transfer of agricultural land were more dominant than the formal government institution's redistribution in the study area. Table 2 portrays the mechanisms of land acquisition among the land scarce farmers in the area.

This finding seems consistent with Dercon et al. (2005), who found similar result that supports the importance of local institutional arrangements. According to their study, despite all land is state-owned, on average 73% of the cultivated land is inherited, meaning that it was acquired from their fathers. About 9% was purchased, mainly before 1977. About 11% of the land was directly allocated by the local administration to the household, as part of the land reform in 1977, or subsequent reallocations in the village. About 7% of land was sharecropped or rented. Inherited land relative to allocated or sharecropped land may appear surprisingly high in the overall context of Ethiopia.

Gender based disaggregated data disclosed that while 33(33%), 13(13%), 12(12%), 9(9%), and 5(5%) of the MHHs acquired agricultural land through inheritance,

**Table 2.** The mechanisms that the current respondents' landholdings are obtained.

Land acquisition mechanisms	Sampled Kebele (n=100)		Total
	MTC (n=40)	KAL (n=60)	
Inheritance	18 (45%)	34 (56.67%)	52 (52%)
From Kebele administration (KA)	4 (10%)	3 (5%)	7(7%)
Donation from relative	8 (20%)	6 (10%)	14 (14.0%)
Donation and KA	0 (0.0%)	3 (5%)	3 (3.0%)
Sharecropping	5 (12.5%)	7 (11.67%)	12 (12%)
Renting-in	3 (7.5%)	6 (10%)	9 (9%)
Inheritance, sharecropping, and rented-in	2 (5%)	0 (.0%)	2 (2 %)
Donation and partially clearing forest	0 (0.0%)	1 (1.66%)	1 (1%)

Note. The numbers outside the parenthesis are representing the count. Source: Own Survey, 2010.

donation from relatives, sharecropping, and renting-in, respectively; the FHHs counterpart acquired agricultural land through inheritance 19(19%), Kebele administration 2(2%), donation from relatives 1(1%) and 6(6%) combination of these. It is worth to note that majority of the inheritances of farmland among the respondents were not smooth. It was through court decisions that the claims are often settled unlike the transfers/donations, which are positive sentiments of the giver. To cite an example, about 79% of the court cases in the study district were directly and indirectly related to land acquisition, farmland border disputes, and inheritance issues.

Female-headed households were in the worst position and discriminated both by formal and informal institutions of agricultural land acquisition. As shown above, except inheritance all arrangements discriminate women. Field evidence also showed that most farmers who rented-out or gave sharecropping were not willing to share or transfer their land to women for the very reason that they doubted the performances of female farmers in agricultural production and paying back in cash or in kind as per their agreement. However, most farmers prefer to rent-in and take sharecropping from FHHs as they are not stringent on land management and do not discard agreements in short-term with changing condition.

This survey also attempted to capture whether or not agricultural land could be obtained in selected Kebeles if one wants to engage in farming. The result depicted that the majority (85%) of the respondents could obtain agricultural land mainly through informal institutional arrangements while 15% stated that there are possibilities but they could not access due to high price of land rent-in, requirements of draught power and labor to engage in sharecropping through formal arrangements.

Whatever the case may be, without these informal sharing and transferring mechanisms, the life of land scarce and young farmers might be at stack and show the 'associative ownership' of land acquisition was already operating covertly to cope with land scarcity. In other words, whatever the regional or the federal land

policies and administrations dictate, local specific informal institutional arrangements are the widely practiced. It took a well-grounded acquisition of agricultural land than the widely assumed formal institutional devices of government authorities. This also shows the confrontation that widely preached private ownership proposition is misleading without considering informal institutional arrangements.

### ***The local institutions and social networks***

In this subsection, the presence and role of local institutions and social networks are discussed with special emphasis on agricultural land sharing and transferring. The webs of these institutions are often based on neighborhood, marriage and kinship/sibling, religious groups, labor sharing groups, and sharecropping. Other types of linkage are provided through membership of various committees and associations. These key types of local institutions and social networks in the society encompass the agricultural land, seeds, draught power and food sharing mechanisms that are the exciting features of the society in this study.

The FGDs with both FHHs and MHHs revealed that such customary exchange remain an essential feature of social relocations in both the highland and midland agro-ecologies. The exchange occurs between kin living nearby and many continue to participate in exchange with relatives in their home villages either through hosting short-term visitors or by making cash contributions or relief during emergencies. Moreover, there was contribution of food and drink in addition to cash for bigger events such as marriage and death. Apart from kinship relationships, non-kin exchanges were paramount popular to create sense of belongingness to the community and strengthening of the social capital, which showed a social and economic linkage among the land scarce farmers and the rest of the community members. In such a way, the customary exchange was persistently

carried out between and within lineages and neighbors of the farmers, which tied people into webs of social and economic obligations. Despite such interwoven social networks and 'customary exchanges', land sharing and transfer was only limited to blood and marriage ties as well as within a given vicinities.

Specifically, some of the most important local social institutions in relation to land scarce farmers include memberships of Kebele administration, Iddir, Iqub, Jigge/Dabo, Religious Association, Cooperatives, Kebele Administration Council, District Council, and School Committee. Although substantial land scarce farmers are members of Kebele administration (97%), only two of other institutions' members showed significant levels of membership. That is, 87% for Iddir and 84% whose aged over 20, were members of burial societies. The other most popular body was the Dabo/Jige (63%) - a group labor sharing party during the peak season and in case of emergency, and followed by the group recycling contribution, Iqub (43%). About a third of the respondents were also a member of cooperatives and more than a fifth took part in the *Kebele* Council - the grassroots level of formal government institution. Only 7% and 1% of them said that they were member of District Council and School Committee, respectively; the former is the highest level of institution in the district. Moreover, the analysis of institutional landscape of the land scarce farmers showed that the *Iddir* and Religious Associations for burial reason were stronger community-based institutions and very popular.

It was also clear from the results of KIIs and FGDs that coffee making 'clubs' play a more important role in creating social liaison among the neighborhoods. They shared farm resources, information, borrowed money, ate and drank together. Presumably, through the coffee clubs successful *Iqub* and *Dabo/Jige* were often established in the local settings. The club has grown up to an institution that accumulates capital and has made a small number of loans to households for various purposes. This reciprocal relationship was not a new feature of the institutional scene in the study area. Nevertheless, during this study, such institutions have a lacuna in addressing the natural capital depletion aroused from cultivation of forestlands, riversides, and sloppy plots. It attempted to design any strategy that enhances transition to alternative livelihoods activities. Only, to some extent, the institutions have discouraged the inappropriate utilization of local forest areas but some individuals are widely operating covertly.

Thus, as Koczberski et al. (2001) put it and the field evidence confirmed, the 'indigenous economy' constitutes the exchange of goods, services, labor, and cash between kin and acquaintances. It may be by design or default; the ultimate effects of exchange have banded individuals and groups into networks of social relationships and obligations. The 'customary exchanges' in the study area have taken the form of daily gifts

materially in kind, various services and cash contributions to major events to mark initiations, marriage, birth, death, adoption, dispute settlements, risk of loss of property, and land transfer systems. The institution of exchange was found to be extremely important to maintain a society in general and enabled the land scarce farmers to acquire farmland in particular.

### ***Outcome of the institutions***

For the sake of this research and based on conceptual framework adopted for this work, institutional arrangements were categorized into informal and formal mechanism of land acquisition and transfer. The informal includes land inheritance, donation from relatives, informal renting-in and sharecropping. There were categorized under informal institutional arrangement as there was no formal lease or contractual agreement so far entered during land acquisition and transfer in the community. The government reallocation or redistribution through District/Kebele administration was referred to as formal institutional arrangement because all acquisition and transfer was formal and recognized by local or district government.

### ***Formal Institutions***

The formal institutional arrangement for acquisition of agricultural land is under state control; redistribution and reallocation at district and/or Kebele level. In the study area, formal land reallocation in 1977 has had tremendous and radical land tenure status quo and agrarian structure change. After this, there was no redistribution of land for new farmers and the voice of landless and land scarce rural dwellers are still becoming louder than ever. Therefore, land as a government property and more specifically the only way of sharing and transfer through formal institutional mechanism suffered many deficiencies. First, the government policy on the land and land resource was too rigid to operate according to different societal contexts and failed to recognize informal institutions.

Second, the condition of landless and land scarce farmers in the rural area was not taken into consideration but sole relegation of alternative policy statements. The redistribution of land through government authority seemed improbable without disappointing and/or dislocating other farmers. This may have severe social and political costs.

Third, land certification is an attempt to demolish the local informal land acquiring institutions and the new formal institutional arrangement of land rental is expensive and has high transaction costs.

Unlike informal land renting, the price of renting-in/leasing land is expensive and one cannot rent-in or

contract land for more than three years. This further creates artificial scarcity. As Ushakov (2011) noted that domestic economic systems investment attractiveness and innovative level are closely interrelated in the case of capital. Likewise, agricultural land is becoming a source of attractiveness for international capital inflow in Ethiopia and widely setting frustration that the practice could demolish the traditional transfer systems and overwhelmingly increase the land scarcity and landlessness.

Fourth, there were no such comprehensive alternative programs to satisfy the huge demands for agricultural land and reduce the heavy burden on the agricultural land. There was no land saving and productivity augmenting technologies or options that could expand opportunities of non-farming and off-farming activities for the growing rural population.

Finally, despite the fact that fertilizer accessibility is heavily dependent on cash and credit arrangement essential for small scale agriculture (Damisa et al., 2008), government ceased credit services and launched centralized agricultural input supplies, which affected farmers' productivity from the existing small plots and further complicated the life of landless and land scarce poor peasants. Thus, in addition to high population growth, soil degradation, and unfavorable land tenure system, the absence of smallholder focused agricultural and rural development policies, which failed to create rural businesses and other jobs trapped young farmers into vicious cycle of poverty and hunger.

### ***The informal institutions***

Field evidence showed that about 58% of the respondents were not born and 34% of them were not eligible for the 1977 land redistribution. This redistribution was also implicitly marginalized FHHs from access to land and land resources. Even though the situation is immensely improved now and they have equal rights that are guaranteed by the current law and the society, they were denied access to share their property including land in most cases through formal institutional arrangements. As a result, the best mechanism, they approach such cases are through local or clan elders to acquire land.

From the lens of SLA, while the existence and role of informal local institutions were acknowledged as a social capital that enhances the livelihood of land scarce farmers, a handful of the key informants and focused group participants presumably reflected the notion that these institutions are predicament to diversify livelihood strategies to more modern sectors. The practices and norms confined the people to stay at home village and forfeited to open up opportunities available to them. This norm created dependency syndrome on their parents and local societies and economic reliance on meager local resources. To cite an example, the land scarce farmers

rejected the government resettlement program to the more abundant farmland areas outside their administrative zone mainly due to the societal ties they established at home communities.

However, some land scarce farmers opposed the above view. First, whatever informal institutions existed and retained in the community, they were not threats but opportunities for diversification of livelihood strategies and served towards the end of the social security and wealth redistribution. Second, it is improbable to assume that the land scarce farmers are still solely undertaking cultural/customary practices. The field evidence further disclosed that they were not away from a piece-meal of modern agricultural practices such as commercial fertilizers, High Yield Varieties (HYVs), and better farm tools. Thus, it is plausible to say that informal institutional arrangement is more dominant, facilitate agricultural land sharing and transfer; its positive outcomes outweigh its pitfalls, and widely accepted and accessed in the face of local community than the formal institution which is already obsolete to enhance land acquisition and transfer for the smallholder, land scarce and landless farmers (Table 3 shows comparison of formal and informal institutions).

### **CONCLUSIONS**

This paper strives to indicate some of the key institutions that facilitate agricultural land acquisition and transfer among the land scarce and landless segment of farmers. Despite an enormous emphases of scholars, policy makers, donor agencies and political parties on the contribution and arrangement of formal institutions and policies, a close look at and the analysis of agrarian social relations, institutions, and livelihoods revealed that the role of informal institutions are tremendous in mitigating social unrest that could be arisen from severe agricultural shortage.

The majority of the highland and midland agricultural land scarce households are predominantly acquiring agricultural land through inheritances from their parents followed by donations from relatives, sharecropping, renting-in, Kebele administrations, and acquisition from the combination of these mechanisms. It was also found that the land scarce and landless peasants engaged in land renting-in within and outside their village. Social capital was found to be strong to share and access land. Thus, the reality on ground is that the farmers perceived that land belongs to them, not anyone else. It can be transferred to other holders based on their consent. In this regard, policy polarities are a mere gadget for political benefit than economic importance.

The other key contention in this paper is that within a given community, there are tradeoffs between the formal and informal institutions as one is against the other rather than augmenting each other. The land certification, for

**Table 3.** Comparison of formal and informal institutions of land acquisition and transfer.

Formal Institutions	Informal institutions
(i) State control, redistribution and reallocation at District and/or Kebele level	(i) Community control, redistribution and reallocation at community/ household level
(ii) Not responsive to new farmers, landless and land scarce rural dwellers	(ii) Responsive to the new farmers , landless and land scarce
(iii) Land as a government property is too rigid in terms of sharing and transfer and suffers many deficiencies.	(iii) In such acquisitions and transfers are easy and flexible.
(iv) Fail to recognize overwhelmingly used informal institutional arrangements	(iv) Operate according to different societal contexts
(v) Because of severe social and political costs, redistribution through government authority seems improbable without disappointing and/or dislocating other farmers.	(v) Such sharing and transfer is mostly based on consent and less likely to disappoint and/or dislocate other farmers.
(vi) Formal institutional arrangement of land rental is expensive and has high transaction costs.	(vi) Informal institutional arrangement of land acquisition is less expensive and has low transaction costs
(vii) One cannot rent-in or contract land for more than three years. This further created artificial scarcity	(vii) No limit as far as the two parts in rent-in or contract agree, that is, may be permanent or temporary.
(viii) No as such comprehensive alternative programs to satisfy the huge demands for agricultural land.	(viii) It is an alternative social set up and reduces the huge demands for land.
(ix) No options that can expand opportunities of non-farm and off-farm activities for the growing rural population.	(ix) Created dependency syndrome on their parents and local societies and economic reliance on meagre local resources

instance, has enriched the formal institutions on one hand and slimed the life and opportunity of new entrants through abandoning the informal institutional set up on the other hand.

It is also plausible to conclude that agrarian population is increasing without hand in hand expansion of urbanization and/or generation of non-agricultural sources of livelihood. As far as it is impossible to expand agricultural land and no limit for dramatic increase of farming population, land acquisition mechanisms through sharing and transfer are not a panacea to uplift land scarce peasants from poverty trap.

## RECOMMENDATIONS

The informal institutions are already operating broadly at societal level and immensely curbing a problem of land shortage and thus they must be recognized and inculcated to formal institutional arrangements. Even though the institutions of land acquisition and transfer were immensely important to resolve the current social ills-like land shortage, they were not sustainable remedy to transform agrarian economy and society. Therefore, scouting alternative livelihood mechanisms are not an option but an imperative. Some of the avenues possibly suggested are creating adequate non-agricultural employment, access to sufficient credit, improved farm technologies, market and communication infrastructures to increase productivity from the existing plot along with management and conservation of natural resources. Specifically, land saving agricultural activities such as

livestock fattening, chicken raising, beekeeping and diversification of with high-value and vegetable production are essential to diversify livelihood and exploit the niche opportunities. The best approach to overcome land shortage is to promote a package of integrated agricultural and non-agricultural livelihood strategies. Finally, based on the theoretical and review of related literatures and the outcomes of the research findings and gaps, the following thematic areas are suggested for further research. These are the role of village wage employments in reducing the pressure on agricultural land and thereby the rural households'livelihood, and the effects of social and marketing infrastructures and the role of micro-finance and credit provision on the livelihood diversifications of agricultural land scarce and landless farmers.

## Conflict of Interests

The author(s) have not declared any conflict of interests.

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*Full Length Research Paper*

## Access to and utilization of development information by rural women in dire dawa administrative council, Eastern Ethiopia

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Access to and utilization of information makes individuals to be more rational, increases decision-making abilities and allow to take informed decisions. Hence the purposes of this study were to assess rural women's access to and utilization of development information related to reproductive, productive and community roles performed by them in a case study conducted in Dire Dawa Administrative Council, Eastern Ethiopia. A two-stage sampling procedure was used to select 160 sample households. The data were obtained using quantitative survey and complimented with focus group discussion and field observations. Descriptive statistics were used to analyze the data. The results revealed that, almost none of them had frequent (four times and more per year) reproductive role information access. The most accessible items on sometimes (once in a year) time interval were avoiding unexpected pregnancy (75.6%), vaccine for new born baby (67.5%) and hygiene of children (62.5%). However, 54.4% of them were not utilizing the information due to practical infeasibility of the information, lack of capital, shortage of water and cultural and religious influence. The same trend had been observed in access and utilization of productive and community role information. About 53.1% and 70% respondents were not having access at all to productive and community role information respectively. Only 20% and 5% of respondents were utilizing accessible productive and community role information respectively. Poor agro-ecological condition, lack of physical access to resources, agricultural extension contact and capital to buy agricultural inputs are among the reasons given by those who are not utilizing the accessible information. Therefore, special attention should be paid in selecting communication channels that are most appropriate to reach and empower rural women. Moreover, communication programs and development information providers must deal with the various economic and social issues affecting women, including education, agriculture, health, nutrition, family planning, population growth, and the environment.

**Key words:** Access, utilization, development information, rural women.

### INTRODUCTION

Communication in development has become a wide but specialized field in recent years, and may include: participatory mechanisms, service delivery, advocacy, civil society building, research dissemination, networking

initiatives and different uses of mass media (Burke, 1999). Communication is no longer seen as a one-way, top-down transfer of messages and information; instead, when applied to development, communication is used to

promote a two-way process of sharing and participation. Communication of information and ideas has an important role to play in many arenas of social and economic development, which stand as a prerequisite for the improvement of individual and household well being. It facilitates individual and group innovation, the application of new knowledge, strengthens decision making abilities and can improve livelihood outcomes (Leeuwis, 2004). More importantly, communication promotes changes in attitude and social behavior and help communities to identify sustainable opportunities and development solutions that are within their reach. Accessing and using knowledge can be a process of self-empowerment. That is why communication and information flow is considered to be the main agenda in the development strategies of the third world in the present century.

Despite the massive changes to development communication which has seen a significant increase in the access of rural, peri-urban and urban communities to information technologies (DFID, 1999), there are many countries in Africa where rural areas have limited or no access to such channels and continue to be neglected even by more traditional forms of information dissemination. Moreover, variation in access to information is structured not only by poverty considerations but also those of social and cultural norms and importantly gender issues.

Ethiopia being a country with high degree of illiteracy and insufficient mass media channels faces problem of lack of access to information for the rural population. Especially for rural women in Ethiopia embedded with a lot of responsibilities and obliged to do longer hours than men, attention is not paid in awareness creation (Hedija and Bezabih, 2003) and dissemination of labour, time and drudgery reducing technologies (FAO, 1992). The chances to improve them from the traditional bound styles which are carried over from earlier generations seem to be less. To alleviate the problem one solution would be to increase women access and effective utilization of development information.

Even though, the grass root level network of development efforts by the governments and NGOs pave the way to access information at least to a limited scale, they would not be able to reach large majority of the rural poor particularly women. For instance, the current agricultural and health extension programs have been designed and implemented since 1995 and 2003 respectively in recognition of the fact that the major factor underlying poor agriculture and health services in Ethiopia is lack of access to information and empowerment of households and communities. The health extension service is a community based health service delivery program whose educational approach is based on

diffusion of information, which would change community behavior step by step. On the other hand the agricultural extension program in Ethiopia promote women's' participation in the agricultural extension activities and has adopted a family centered approach that deals primarily with households as a unit. However, it fails to capture the unique and important role of women in the household as a result it continues to marginalize them from the development process. Furthermore, the male-dominated extension system also often restrains from contacting and working with women due to the strong cultural taboos and value systems in rural areas (Frank, 1999; Dagnachew, 2002).

Generally despite the attempts made by government and NGOs to address gender issues, the level of empowering rural women in Ethiopia is very low. This is manifested by the suffering of women and girls from poverty, their low social status in the household and the community, low participation in decision making process, having less or no accesses to education and resources as well as domestic and farm workload. Therefore, the purpose of this study was to look into the extent of access to and utilization of development information by rural women from different agencies such as GOs and

NGOs and to know the extent of utilizing the available information. The study has explored access to and utilization of information by the respondents in respect of reproductive, productive and community roles (triple roles) performed by them, out of the development messages originated from different agencies. For the purpose of this study, 'Development information' was defined as all types of information flow pertaining to development aspects of rural life such as farming, family planning, home management, natural resource management generally considers reproductive, productive and community role information. 'Access' is conceived as the access of rural women to development information relating to their triple roles. 'Utilization' relates to the utilization of development information received by the rural women in performing their triple roles.

## METHODOLOGY

### Description of the study area

This study was conducted in Dire Dawa Administrative Council (DDAC) located in the Eastern part of Ethiopia, lying between 9° 49' N latitude and between 41° 38' and 42° 19' E longitude. In the West, North and East, it is bounded by the Somali National Regional States and in the South by the Oromia National Regional State (Agricultural Development Office of DDAC, 1998). After the reorganization of the older system of provinces in 1995, Dire Dawa becomes a chartered city (*Astedader Akabibi*), second largest city after Addis Ababa (Agricultural Development Office of DDAC, 2001).

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**Table 1.** Frequency distribution of access to development information related to reproductive role of rural women in DDAC (n= 160).

Reproductive roles	Frequency of getting information					
	Frequently		Sometimes		Never	
	Number	%	Number	%	Number	%
Cooking	-	-	68	42.5	92	57.5
How to feed the whole family	-	-	66	41.3	94	58.8
Vaccination for new born baby	2	1.3	108	67.5	50	31.3
Care of sick children	2	1.3	100	62.5	58	36.3
Hygiene of children	2	1.3	100	62.5	58	36.3
How to combine balanced food	-	-	68	42.5	92	57.5
Avoiding unexpected pregnancy	-	-	121	75.6	39	24.4
Hygiene of house and the surrounding	-	-	69	43.1	91	56.9
Home management	-	-	74	46.2	86	53.8

Source: Survey result.

### Sampling techniques

The data used in this study were obtained from a household survey conducted in eight selected peasant associations (PAS) (the lowest administrative unit) of Dire Dawa administrative council in 2004. Site selection was based on accessibility, and homogeneity in socio-economic and physical characteristics including the presence of Government Organization (GOs), and Non-Governmental Organizations (NGOs). A two stage sampling procedure was employed. In the first stage, four PAs involved in programs run by the Ethiopian Catholic Church (ECC) and the Hararghe Catholic Secretariat (HCS) was selected purposively. It was assumed that these PAs covered by the NGOs would also have access to different government development programs. Another four PAs not involved with specific NGO projects but covered only by government services were selected randomly from the remaining PAs. In the second stage sampling a list of females in 'edir' in each village was used to select randomly a total of 160 sample households (117 females from male headed household and 43 from female headed households).

### Data collection and analysis

The data were collected using structured and pre-tested questionnaire. Interviews and focus group discussions were used to compliment the data obtained through the field survey. A list of items reflecting reproductive, productive and community roles of women were used to collect the data. After pre-testing the data, reliability analysis was conducted to make sure the validity and reliability of items used to measure each concept (Appendix 1). Moreover to overcome some of the problems of recalling, maximum efforts were made to increase the reliability by further probing the response. Respondents were asked about their access and use of information limited to a time period of the last three years (2001 to 2003). The extent of information access were measured by using a three point continuum namely, 'frequently', 'sometimes' and 'never'. For those who gets information four times and more than per year could be classified as "frequent" access, and for those who gets information once per year or with unlimited time or if they were uncertain they could classified as "some times" access and those who do not have information access at all classified as "never". To analyze the collected data simple descriptive statistics were employed.

## RESULTS AND DISCUSSION

### Access to and utilization of reproductive role information by rural women

As indicated in Table 1, almost none of them had frequent information access, whereas, more than 50% of the respondents had access to information on 'some times' bases for few reproductive roles. The most accessible reproductive role information were, avoiding unexpected pregnancy (75.6%), vaccination for new born baby (67.5%), care of sick children (62.5%), and hygiene of children (62.5%). This result shows that there was somewhat better information access in health aspects while in relation to cooking, on how to combine balanced food, home management and on how to feed small livestock, the access trend was not encouraging. The items contribute more in improving reproductive role performed by women, if it were supported by development information. A study conducted in Eastern Hararghe by Karrippai and Hedija (2004), stated that rural women had access to information only meagerly in all the subject areas explored and among them child care, family planning, reproductive health and home management had better performance in that order; though inadequate.

Utilization of accessible reproductive role information was very low. As shown in Table 2, only 17.5% of them were utilizing the information while 54.4% were not. According to women's response practical infeasibility of the information, lack of capital, shortage of water and cultural and religious influence were among the reasons that limit them to utilize accessible information. The information provided for them are not considering their awareness level, educational level, where the majority of rural women are illiterate and live in remote areas. During the group discussion majority of group members said, 'let alone for cleaning of our children, we do not have

**Table 2.** Frequency distribution of utilization of reproductive role information and reason for non-utilization of accessible information (n= 160).

Extent of utilization	Number	Percent
Utilize the information	28	17.5
Not utilize the information	87	54.4
No access at all	45	28.1
Reasons for non-utilizing		
Shortage of money alone	14	16.1
Shortage of water alone	30	34.5
Combination of practical infeasibility of information, lack of time, shortage of money, Shortage of water and influence of culture and religion	43	49.4

Source: Survey result.

even sufficient water for drinking'. This indicates how severe the problem is. A study conducted by Belay (2002) in DDAC stated that, in the DDAC, water is a limiting factor for both agricultural and domestic purposes. Another limiting factor to utilize accessible information is lack of capital. Almost all respondents were dependent on food aid provided by GOs and NGOs. The income they gained from different activities is not enough to fulfill their basic needs. In the study areas, the average income of the respondents was 677.40 birr/year with maximum income 10700 birr/year. Regarding cultural and religious influence, it's mainly related with family planning, attending advice during pregnancy etc. Most of them believed that children are gifts of God so that they do not want to use birth control. Furthermore, their spouses did not encourage and allow them to use contraceptives. Informal crosscheck was made with some of females' spouses' to know their stand about family planning methods, surprisingly, they were not willing to discuss the issue at all and even some of them were annoyed and said, 'why are you interfering with the work of God?'. Similar assessment by UNICEF (1993) observed that traditionally, conception/pregnancy is welcomed by the extended family system because children are regarded as God's blessing. Conception enhances the women's security because it ensures her continued married life. Where a woman does not conceive, within a year of marriage, neighbors begin to spread rumors of infertility. If she fails to conceive, the husband is liable to divorce her and to marry again.

### Access and utilization of information related to productive role of rural women

The items used to measure the rural women's access to productive role information are indicated in Table 3. About more than half of the sample respondents (53.1%) were not having access at all to productive role information. The most inaccessible productive role information are how to harvest and thresh (85.6%), fodder preparation (78.8%), milking procedure (78.1%),

care of birth of animals (73.1%), application of pesticides and spray chemicals (73.1%), disease control measures of crop and livestock (72.5%), and cattle breeding (71.9%). About 41.9% and 41.3% of the respondents respectively had information access on 'some times' (once in a year) time interval for seed selection and sowing on line respectively. Only 1% and 0.6% of the respondents had frequent access to irrigation information and water harvesting technology respectively. This is insignificant compared to the overall contribution of women in agricultural activities. Even though gender division of labour in rural Ethiopia varies in terms of farming systems, cultural settings, location and the different wealth categories, women farmers perform up to 75% of farm labor, representing 70% of household food production in Ethiopia (USAID, 2013). The result is consistent with previous study conducted in Eastern Hararghe (Karripai and Hedija, 2004) who observed that access to scientific information on crop production; environment and sanitation as well as livestock management were very insignificant for rural women.

As shown in Table 4, the utilization of productive role information was not encouraging. Among the respondents who had access, only 20% were utilizing the information while 26.9% were not. The main reason revealed by the respondents for non-utilization of the accessible productive role information was poor agro-ecological condition of the area. This issue was discussed in detail with group members as well as with key informants.

The agro-ecological condition of the area is dry, highly degraded, low rain fall pattern and most of the areas are not suitable to produce vegetables (mostly cultivated by women), fruits and cash crops due to the severity of land degradation and shortage of water as revealed by the respondents. In few of the study areas, they were using irrigation but it was not as such satisfactory because of the water level of rivers are decreasing and/or complete dryness from time to time. Moreover, limited physical access to resources, low agricultural extension contact and lack of capital to buy agricultural inputs are other

**Table 3.** Frequency distribution of access to development information related to productive role of rural women in DDAC (n = 160).

Items	Frequency of getting information					
	Frequently		Sometimes		Never	
	Number	%	Number	%	Number	%
Land preparation	-	-	52	32.5	108	67.5
Seed selection	-	-	66	41.3	94	58.8
Sowing on line	-	-	67	41.9	93	58.1
Fertilizer application	1	0.6	61	38.1	98	61.3
Harvesting and threshing	-	-	23	14.4	137	85.6
Storing	-	-	35	21.9	125	78.1
Application of pesticides and spray chemicals	-	-	43	26.9	117	73.1
Irrigation of farm land	2	1.3	48	30.0	110	68.8
Intercropping	-	-	54	33.8	106	66.2
Water harvesting technology	2	1.3	54	33.8	104	65.0
Cattle breeding	-	-	45	28.1	115	71.9
Care of birth animal	-	-	43	26.9	117	73.1
Disease control measures of crops and livestock	-	-	44	27.5	116	72.5
Cultivating vegetables	1	0.6	50	31.3	109	68.1
How to take garden products to market	1	0.6	50	31.3	109	68.1
Fodder preparation	-	-	34	21.3	126	78.8
Milking procedure	-	-	35	21.9	125	78.1

Source: Survey result.

factors for non-utilization of accessible information. About 51.9% of the respondents had no contact at all with extension workers. Only 5.6% of them had been visited by extension workers once in three months, whereas about 42.5% of them had been visited by extension workers only once in a year. Though the data used for this paper is relatively old (2004), its findings are in agreement with recent studies who observed that, the top-down approach, the perception that “women are not farmers” and the focus on getting model farmers to adopt fixed-technology packages (World Bank, 2010) has not changed significantly to increase women’s participation in extension programs. Moreover, a serious selection bias during placement of program participants is reported (Elias et al., 2013) as a result agricultural extension program tends to neglect poor farmers, particularly women (Ogato et al., 2009; Umeta, 2013). Furthermore, agricultural innovations rarely take gender-specific characteristics (Action Aid and CARE, 2012), particularly sufficient extension packages are not taken up for the dissemination of women friendly, labor and time saving and drudgery reducing technologies.

#### Access to and utilization of community role information by rural women

The survey results in Table 5 revealed that majority (70%) of the respondents were not aware of about involving in community activities. Only 0.8% and 29.5% of them had information access frequently and sometimes

respectively. According to those who are participated in our group discussion, “Community roles are often performed by men and women are being considered as incompetent to handle community issues and make good decision making’. Even though the jobs are unpaid voluntary for both, but women are screened out from exposure, experience, status and power (FAO, 1998).

Those who had frequent information access were getting the chance because they were participating in GOs and NGOs group activities while others accepted the norm in which community activities are being given for men by the society and they did not realize themselves as half part the community.

As stated in previous section majority of rural women of DDAC did not have information access related to community role activities and even for those who had awareness about community participation, only 5% of them were actively participating in it. The respondents identified a certain number of constraints to women participation in community activities such as women are not eligible and not welcome by the society, men are not allow their wives and their workload causes poor time-keeping and prohibits their effective participation.

#### CONCLUSION AND RECOMMENDATIONS

This study clearly indicates that access to and utilization of different types of information by rural women was generally minimal. The survey results show that the most accessible information related to reproductive roles with

**Table 4.** Frequency distribution of utilizing accessible productive role information and reasons for non-utilization of accessible productive role information (n= 160).

<b>Extent of utilization</b>	<b>Number</b>	<b>Percent</b>
Utilizing the information	32	20.0
Not utilizing the information	43	26.9
No access to the information	85	53.1
<b>Reasons for non-utilization of the accessible information</b>		
Agro-ecological condition of the area	22	51.2
Limited physical access to resources and agricultural extension contact	13	30.2
Shortage of capital to buy inputs	8	18.6

Source: Survey result.

**Table 5.** Frequency distribution of access to development information related to community role of rural women in DDAC. (n = 160).

<b>Items</b>	<b>Frequency of getting information</b>					
	<b>Frequently</b>		<b>Sometimes</b>		<b>Never</b>	
	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>	<b>Number</b>	<b>%</b>
Decision making in community issues	1	0.6	38	23.8	121	75.6
Participation in committees	3	1.9	37	23.1	120	75.0
Leadership position	1	0.6	31	19.4	128	80.0
Wedding ceremony with available economy	1	0.6	48	30.0	111	69.4
Informal institutions like <i>idir, ekub, mahiber</i>	3	1.9	62	38.8	106	66.3
Preventing environment pollution	-	-	54	33.8	106	66.3
Planting trees	-	-	60	37.5	100	62.5

Source: Survey result.

**Table 6.** Extent of utilization and reasons for non-utilization of community role information (n = 160).

<b>Extent of utilization/ participation in community activities</b>	<b>Number (N= 160)</b>	<b>Percent</b>
Yes I have been involving in community activities	8	5.0
No I did not involve in community activities	40	25.0
I did not have information at all	112	70.0
<b>Reasons for non-utilization/ non-participation</b>		
Women are not eligible and not welcomed by the society	17	42.5
Men are not allowed their wives	13	32.5
Workload	10	25.0

Source: Survey result.

'sometimes' time interval were, avoiding unexpected pregnancy (75.6%), vaccine for new born baby (67.5%), and care and hygiene of children (62.5%). But for other types of reproductive roles majority of the respondents were not having access to development information. Surprisingly, 54.4% of respondents were not utilizing the accessible reproductive role information due to practical

infeasibility of the information (not considering the existing situation for instance women's awareness and education level), lack of capital, shortage of water and cultural and religious influence.

The same trend had observed in access to and utilization of productive and community role information. It was very minimal. About more than half of the sample



respondents (53.1 and 70%) were not having access at all to productive and community role information respectively. Only 20 and 5% of respondents were utilizing accessible productive and community role information respectively. Agro ecological condition of the area, shortage of water, limited agricultural extension contact and lack of capital to buy agricultural inputs are among the reasons given by those who are not utilizing the accessible productive information.

Though everyone accepts the fact that rural women constitute nearly half of the working population, having significant roles in reproductive and productive dimension and ought to have active roles in community affairs in the rural areas, the development information flow oriented to bring about desirable changes in their life is not even in the minimum required level. The results have proved that rural women here continue to be a neglected section of the population in terms of development communication efforts. Since large majority of them do not have any access to development information, and if at all they are constrained with many factors to utilize those information, and hence the translation of the change messages related to reproductive, productive and community roles remain to be skeptical.

Therefore, special attention should be paid in selecting communication channels that are most appropriate to reach rural women. Moreover, strategic changes should be taken in programs of GOs and NGOs working in the field to empower women which help to achieve an equitable development to all members of the community in general and for women in particular. Women are involved in many aspects of rural life; their traditional knowledge systems are complex and holistic, thus, communication programs and development information must deal with the various economic and social issues affecting women, including education, agriculture, health, nutrition, family planning, population growth, and the environment.

## Conflict of Interests

The author(s) have not declared any conflict of interests.

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**Appendix 1.** Results of reliability analysis of items that measures reproductive, productive and community roles of rural women.

Reliability analysis of items that measures reproductive roles of rural women

N of Cases = 43.0                      N of Items = 9  
Alpha = 0.9208

Reliability analysis of items that measures productive roles of rural women

N of Cases = 43.0                      N of Items = 17  
Alpha = 0.9535

Reliability analysis of items that measures community roles of rural women

N of Cases = 43.0                      N of Items = 8  
Alpha = 0.9242

*Full Length Research Paper*

# The role of internet in the professional development of agricultural educators: The case study of Kermanshah Province, Iran

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Internet is one of the most important innovations in the field of information and this has a significant impact on education. The use of technology is increasing rapidly. Today, in the scientific communities, a large number of individuals are interested in internet. This is expected for researchers to update their knowledge to provide information to the internet for its services to be used. The aim of this study is to explore the role of the internet in the professional development of farming educators. Sample surveys of agricultural education instructors and Kermanshah City (N=35) were formed due to the small size of the population. The return rate of questionnaires delivered to learners was 30 items (85%). Information collected through questionnaire was analyzed using SPSS tool. Results showed that most educators of the internet search for scholarly articles and also acquire new information to develop their professional interest. Low-cost of internet access is a major constraint to the use of this important tool. The need for easier access to the internet is necessary for educators.

**Key words:** Agricultural educator, internet, professional development.

## INTRODUCTION

Undoubtedly, the main components of agricultural education systems are teachers. Therefore, improving the professional development of agricultural teachers through proper planning is essential. Agricultural educators, through training of skilled and professional people, are considered among the most influential factors of educational systems. Professional development is a continuous learning process for all levels of education in the learning community. It aims to help educators in

achieving their goals towards a brighter perspective. Professional development ensures that educators of content, processes, knowledge, skills are qualified and prepared to teach learners to fulfill their high levels of skill standards (Wisconsin, 2003).

Nowadays, with the development of tools for comprehensive information particularly, information technology development, the use of technology in the professional development of teachers is important.

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Internet is a tool that has great potential to encourage and facilitate teaching and learning in agricultural sciences and can serve as a new way to facilitate the processing of information, encouraging learners to be responsible for their own learning and to help teachers understand as a facilitator in the learning process. Hence, the educational use of the internet in daily life is growing increasingly (Demirbilek, 2009).

Policymakers and experts believe that the use of information technology capabilities and talents can have a significant impact on educational processes and outcomes (Drent and Meelissen, 2008). Due to this problem over the past decades, educators have a lot of pressure to make use of the abilities and talents of information technology (Al-Ammari, 2004; Accascina and Victor, 2003). Although information technology tools such as computers and the internet are widely available, they are very limited in the process of teaching and learning (Holecombe, 2000; Shiroma, 2000; Shireesh, 2004). Research and empirical studies suggest that the combination of ICT in education has a tremendous impact as in any other field and is one of the most important strategies for improving the quality of education (Leng, 2008). A large part of researches examines the status of teachers and ICT with emphasis that technology is a tool that can help teachers embody best practices to create enriched and collaborative learning environments, meet a variety of learning style needs, support learning transfer, address high-level thinking, make education equitable, incorporate real world problems, authentic assessments and prepare students for the need of lifelong learning (Coutinho, 2007).

Underwood et al. (2006) believe that when the field is provided with effective investments in ICT, it impacts the educational standards in schools and likewise makes teachers more professional and committed to giving quality and quantity teaching. According to Mary (2004), the computer can also be useful for teachers and students. The results of this research indicated that teachers need to have more training in computer skills. More than half of teachers do not have access to any computer sites, even though they are more beneficial to them than the students.

Hyosung (2004) shows that the use of information technology by educators directly influences the usefulness of information technology and the individual factors. Teachers' attitude towards information technology was in significant relationship with the use of information technology. The feeling of easiness in the use of IT has meaningful relationship with a sense of usefulness and use of information technology. In addition, environmental conditions and computer skills in the use of information technology by teachers were effective. However, several surveys on teachers' attitudes towards the use of information technology indicate that two-thirds of educators have positive attitude towards the importance of ICT in teaching and learning process (Blair, 1997).

In the research of Yaghoubi (2004) in Zanjan University

on access factors affecting internet use by faculty members, the result shows that respondents have a positive attitude towards the internet and there is a positive and significant relationship between internet usage and features such as computer skills, English language proficiency, age, occupation, number of scientific and research activities. Peckhamand and Iverson (1999) study, on the use of internet in Georgia Agricultural Education Programs, indicates that approximately 33% of teachers use the internet to search for agricultural research resources, gain access to training programs and receive training plan. The overall results of this study indicate that internet in university agricultural programs is limited in use.

In another study, Layfield and Scanlon (1999) investigate factors that encourage agricultural high school teachers to use the internet. The results showed that a significant relationship exists between education, field of study and age of educators with rate of internet use. It also became clear that the most significant factors, for the use of internet are some options such as: feeling comfortable when working with computers, time and interest in learning to use the internet, the existence of skilled people and experts in the field of internet in educational institute, having a partner who is skilled on the internet and finally access to a computer center with internet facilities.

Results from the study, "Determining teachers' attitudes towards the internet and its use in Pennsylvania, America" showed that teachers' attitudes towards the internet does not have a significant relationship with its actual use (Layfield and Scanlon, 1998). Study on information-seeking behavior of faculty member of Iranian Research Organization for Science and Technology showed that the main motives why these people search for information on the internet are to do research work. Survey on the use of internet by faculty member of Medical Sciences of Iran, Tehran and Shahid Beheshti University showed that the highest percentage of internet users (82.7%) has less than 5 years work experience, and the professors use the internet more than other groups and academic ranks. In this study, the relationship between internet use and academic rank is significant (Hazrati, 1377). Panda and Mishra (2007), in their study, found that computers and e-mail have a significant and positive correlation with attitude to E-learning, and the most important motivational factor in the use of e-learning for teaching include: personal interest in the use of technology, intellectual challenges and availability of technical infrastructure.

Thus as described above, it is known that the internet is widely used in educational institutions in order to expand the quality and quantity of training and professional development. With recent advances in information and communication technology, application of the internet in teaching, learning and professional development of educators is essential. And since this can have an important role in the professional development, the aim of

study is to investigate the role of internet in the professional development of educators.

### **Objectives of the research**

The aim of this study is to explore the role of the internet in the professional development of agricultural educators. It highlights the problems that agricultural science educators face in the use of internet, what they think about features of the internet, types of knowledge they acquire in the use of information and communication technologies

### **METHODOLOGY**

Census questionnaire was used in this study. Thirty five educators working in Agricultural Training Centers of Kermanshah, Province were interviewed to fill the questionnaire. This was sent to all persons and 30 of them completed and returned the questionnaire. The main instrument for data collection was structured questionnaire, composed of four major sections: demographic characteristics, ways of using the internet for the professional development, barriers to using the internet and their skills. Validity of questionnaire was approved by members of the Faculty of Agriculture Razi University. Cronbach alpha indicates that reliability of the data is about 86/0. SPSS version 19 was used for data analysis. Therefore, mean, standard deviation and coefficient of variation were used in descriptive statistics and correlation was used for inferential statistics.

### **FINDINGS**

#### **Individual and professional characteristics of educators**

##### ***Age and literacy level***

The results of the research showed that the average age of educators was 34.3 years and 80% of them have post graduate result. Educators with graduate level are in the second rank. It should be noted, that there was a PHD student in the study.

##### ***Internet accessibility of educators***

About the internet accessibility of educators, the results showed that 26 educators (86.6%) at home and 12(40%) of them had access to the internet in the training center. In response to the question of whether they have a personal website, there were 22 negative responses and also in response to the question of having a personal blog, 24 (80%) did not have a personal blog.

##### ***Average hours of Internet use by educators***

Average hours of internet use by educators were about

5.3 per week. Educators that often use the internet more than 5 hours per week had the highest frequency (46.6%).16 respondents (3/53%) use e-mail every day. Accordingly, it is obvious that the rate of internet users has been growing gradually in the last few years.

#### ***Fields of using the Internet in the development of professional educators***

The results on fields of using the internet in the development of professional educators are shown in Table 1. The results show that the most important use of the internet by educators is to search for academic information (mean = 4.6). Others are, access to the newest information (mean = 4.53), access to learning opportunities (mean = 4.3), expansion of experience in order to achieve success in the job (mean = 4.3), knowledge about educational issues of the day (mean = 4.27).The results also show that least important is the use of the internet for entertainment (average = 2.93) and chatting (mean = 1.9).

The development of information technology at the university and society level requires preparation of some equipment. In other words, facilities should be provided to access the internet. The main barriers to the use of the internet are Low- speed internet (mean =3.6), paying to get the papers (mean = 3.57), problems to get specific subjects (mean = 3.37), limited resources to purchase computers (mean = 3.23) lack of time to make more use of the internet (mean = 3.2) (Table 2).

Attitudes of Agricultural educators toward features of the internet were assessed in eight items (Table 3). Result showed that overall, respondents had positive attitude to internet uses and abilities. The cost of using the internet is low compared to other reference sources (Mean = 4.67). Use of the internet is useful for educators (Mean = 4.6). Having a feeling to use the internet is an important factor for its uasage (Mean = 4.37). It should be noted that these results represent teachers who tend to apply this technology. Result about knowledge of educators from various fields of ICT is presented in Table 4. The result shows that respondents' knowledge of Yahoo (mean = 4.37) is more than the other cases and their knowledge of Google, Windows and Word are located in the next categories. Educators' knowledge of Excel was lowest (mean = 3.6).

#### ***Correlation between individual and professional characteristics with professional development of educators***

Correlation between the independent and dependent variables showed a positive and significant relationship between age and development of professional educators. This means that educators who are older have more professional development. The findings also showed a

**Table 1.** The Internet's role in the professional development of educators and Fields of using the Internet (N = 30).

Variables	Mean	Standard deviation	Coefficient of variation
searching academic information	4.6	0.49	0.1
Access to the newest information	4.53	1.04	0.22
Access to the learning opportunities	4.3	0.65	0.15
Expansion of experience In order to achieve success in the job	4.3	0.83	0.19
access to the latest news of economic, political, etc.	4.3	0.84	0.19
Knowledge about educational issues of the day	4.27	0.9	0.21
Sharing ideas with other teachers	4.2	0.71	0.16
Searching information about Agricultural Sciences	4.17	0.79	0.18
Improvement of teaching skills	4.1	0.8	0.19
Acquiring information about the status of agricultural development	4.07	1.01	0.24
Getting motivation to work	4.03	0.92	0.22
access to global information	4.1	0.66	0.16
Improve their knowledge of English language	4.1	0.99	0.24
E-mail	4.1	0.8	0.19
Academic and scientific	4.1	1.18	0.28
To save time	4	0.91	0.22
To learn teaching methods	4	0.78	0.19
To read online journals and scientific articles	4	1.01	0.25
To learn new skills in practical farming	3.97	0.89	0.22
To keep interest for continue to teaching	3.77	0.97	0.25
Preparing for being creative and innovative	3.77	1.22	0.32
Facilitating the ability to think	3.87	1.01	0.26
Membership in the professional associations	3.6	0.96	0.26
Finding new subjects to offer to the students teaching Creative activities for the students	3.87	0.97	0.25
Finding the exercises and homework for students	3.4	0.96	0.28
Find questions for exams	3.5	1.07	0.3
Finding the lesson plans	3.7	1.31	0.43
Updating Personal Information	3.83	1.02	0.27
Access to the newest scientific findings in the special field of educators	3.93	1.05	0.27
Access to special books related to their field from the Internet	3.63	1.08	0.27
Offer advisory services to educators via the Internet	3.53	1.24	0.34
Correspondence with local experts in their field	3.9	1.38	0.39
Communicate with external experts in their field	3.73	0.99	0.25
using the Internet to check the students homework	3.43	1.3	0.37
Entertainment	2.93	1.61	0.54
chat	1.9	1.37	0.72

positive and significant relationship between teaching experience and professional development of teachers with 95% confidence. This means that teachers, with more teaching experience, have more professional development. There is a significant and positive relationship with 95% confidence between the level of education and professional development of teachers.

## CONCLUSIONS AND RECOMMENDATIONS

The average teaching experience teachers have is about

6 years, which reflects their good working experience. The results indicate that the average age of teachers is about 35 years; the younger teaching force reflects the use of young people in educational centers. In terms of education, teachers with a bachelor's degree are the ones with the highest level of awareness and knowledge among all the educators. Average hours of internet use by educators are about 5.3 per week. This shows that most teachers have access to the internet and are interested in using it in their work. Therefore, adequate facilities must be provided to access the internet so that professional development may be achieved quickly. It

**Table 2.** Barriers to use of the Internet by educators of Agricultural Sciences (N=30).

Variables	Mean	Standard deviation
Low-speed internet	3.6	1.4
Pay to get the papers	3.57	1.27
Problems to get specific subjects	3.37	1.35
Limited resources to purchase computers	3.23	0.72
Lack of time to make more use of the Internet	3.2	1.15
Weaknesses in the way of Internet Search	2.9	1.39
Little knowledge of computers	2.63	1.27
Lack of skills in use of the Internet	2.5	1.22
It is difficult to learn the using f the Internet	2.23	1.19

**Table 3.** Teachers' attitudes about the Internet features (N = 30).

Variables	Mean	Standard deviation
The cost of using the Internet is low compared to other reference sources	4.67	1.24
According to the process of developments now a days use of the internet for professional development of teachers is an essential	4.6	0.77
Use of the Internet is useful for educators	4.6	1.03
Feeling the need for Internet is an important factor to use of it	4.37	0.8
use of the Internet leads to an increased interest in teaching	4.27	0.94
information on the Internet is Comprehensive and useful	4.2	0.92
According to the fast process of changes, Today, the Internet is critical in training activities	4.03	0.92
Use of Other educators from the Internet is an important factoring encouraging people to use the Internet	4	0.64

**Table 4.** Knowledge of educators from various fields of ICT (N = 30).

Variable	Mean	Standard deviation
yahoo	4.37	0.71
Google	4.3	0.7
windows	4.07	0.86
word	4	1.14
Power point	3.97	0.85
Excel	3.6	1.07

**Table 5.** the correlation between individual characteristics and professional The professional development of teachers.

Variable	correlation coefficient	sig
Age	0.425	0.019
Teaching experience	0.432	0.017
Education	0.56	0.01

should be noted also that 60% of respondents do not have access to the internet in educational centers. According to these findings, it is recommended that

facilities should be given to teachers who have access to computers at home or in the workplace. Based on these findings, most of the statistical population uses the



internet to conduct research activities (scholarly articles search) and more than half of the statistical population has been referred to the internet once per day. This finding is in agreement with Hazraties's (1998) findings. Low speed and high cost of internet is a serious problem for educators. Therefore, appropriate policies can be applied in training centers to get better internet access. Adding lines and bandwidth also are ways to solve the problem of low internet speed. Teachers in this study mentioned the internet as an important tool for increasing their access to information and professional development. As shown in Table 1, most educators use the internet to access articles and information that demonstrate professional growth among them. And despite the many obstacles in the process, it is suggested that this is an important instrument that should be available to educators.

Considering the obstacles faced by educators, it is suggested that this useful instrument should be provided and must be acknowledged that the development of internet usage is one of the pillars of professional development of educators. Results showed the educators' knowledge of Yahoo and Google, because they use these programs to communicate with others and ease their communication. The remarkable thing is that the future of educators' work and survival of the organization largely depends on the mastering and use of these new technologies. Therefore, the educational centers organizing training courses provide professional and efficient use of the internet. Results of correlation analysis revealed that there was statistically significant and positive correlation between the age, level of education, educators' teaching experience and professional development.

This means that with an increase in age, level of education and teaching experience, professional development of educators will also increase. This shows the importance of long-term training programs for educators. Then, it is possible to state that with increasing age, educational level and years of teaching experience, it can be concluded that the effort and experience of teachers is more to professional development. These findings of the study are in agreement with the findings of Yaghoubi (2004) and Layfield and Scanlon (1999).

The general inferences that good educators' attitude to the internet is one of the main preconditions for the use of these technologies by them. So the time has come to apply these technologies in education and it is suggested that to stabilize and strengthen positive attitudes in the use of internet, the material and moral incentives that commensurate with the educational level of teachers should be provided. Although the findings showed that a majority of respondents have considerable knowledge of the internet and its features and due to its important role in the present age, it is recommended to hold training courses to learn how to use the Internet.

## Conflict of Interests

The author(s) have not declared any conflict of interests.

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